DVP-NC625/NC665P

RMT-D154A/D155A/D155P

SERVICE MANUAL

US Model
Canadian Model
DVP-NC625/NC665P
PX Model
E Model
Mexican Model
AEP Model
UK Model
Singapore Model
Australia Model
DVP-NC625

Photo : DVP-NC665P (BLACK)
RMT-D155P

SPECIFICATIONS

System

Laser: Semiconductor laser
Signal format system:
NC625: US,CND,PX,E,MX: NTSC
NC665P: US,CND: NTSC
NC625: SP,AUS: PAL/NTSC
NC625: AEP,UK: PAL/(NTSC)

Audio characteristics

Frequency response: DVD VIDEO (PCM 96kHZ): 2Hz to 44 kHZ (±1.0 dB)/ DVD VIDEO (PCM 48 kHZ): 2Hz tO 22 kHz (±0.5 dB)/CD: 2Hz to 20 kHz (±0.5 dB)
Singal-to nosie ratio (S/N ratio): 115 dB (LINE OUT L/R (AUDIO) jacks only)
Harmonic distortion: 0.003%
Dynamic range: DVD VIDEO: 103 dB/ CD:99 dB
Wow and flutter: Less than detected value (±0.001% W PEAK)

The signals from LINE OUT L/R (AUDIO) jacks are measured. When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (COAXIAL) jack are converted to 48 kHz sampling frequency.

Outputs

(Jack name: Jack type/Output level/Load impedance)
LINE OUT L/R (AUDIO): Phono jack/ 2 Vrms/10 kilohms
DIGITAL OUT (COAXIAL): Phono jacks/0.5 Vp-p/75 ohms
DIGITAL OUT (OPTICAL): Optical output jack/–18 dBm (wave length: 660nm) (NC625:SP,AUS/NC665P:CND)
COMPONENT VIDEO OUT (Y,PB/PR, CB/CR): Phono jack/Y: 1.0Vp-p/ PB,PR,CB,CR:0.7Vp-p/75 ohms.
Y: 1.0 ± 0.1 Vp-p
Cb: 646 ± 50mVp-p
Cr: 646 ± 50mVp-p (NC625:US,CND/ NC665P:US,CND)
R,G,B: 700 ± 50Vp-p (NC625:UK,AEP)
LINE OUT (VIDEO): Phono jack/ 1.0 Vp-p/75 ohms
S VIDEO OUT: 4-pin mini DIN/ Y: 1.0Vp-p/C:0.3 Vp-p (PAL), 0.286 Vp-p (NTSC)/75 ohms (NC625:SP,AUS,US,CND,PX,MX,E/ NC665P)

General

Power requirements:
120V AC, 60Hz (NC665P/NC625:US,CND,MX,E)
110 to 240V AC, 50/60 Hz (NC625:UK,SP,AUS,CND,MX,E,US,PX)
See Page 1-1 for further information.
Power consumption:
14W (DVP-NC625: US,CND,PX,E,MX,SP,AUS)/
15W (DVP-NC665P: US/ NC625: AEP,UK)
See page 1-1 for further information.
Dimensions (approx):
430 × 95.5 × 409mm (17 × 3 6/8 × 16 1/18in.) (width/height/ depth) incl. projecting parts
Mass (approx): 5.1kg (11 1b 4 oz)
Operating temperature: 5°C to 35°C (41°F to 95°F)
Operating humidity: 25% to 80%

Supplied accessories

See Page 14. (NC625:CND,US,PX)
See Page 15. (NC625:AEP,MX,E, UK,SP,AUS/NC665P)
See Page 16. (NC625:AEP)

Specifications and design are subject to change without notice.

ENERGY STAR® is a U.S. registered mark. As an ENERGY STAR® Partner, Sony Corporation has determined that this product meets the ENERGY STAR® guidelines for energy efficiency. (NC625:CND,US,CND,US,PX/NC665P)

CD/DVD PLAYER

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion.
   Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

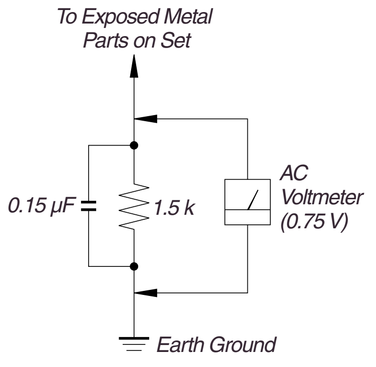


Fig. A. Using an AC voltmeter to check AC leakage.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

The use of optical instrument with this product will increase eye hazard.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA TW-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

LF : LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

CLASS 1 LASER PRODUCT
LASER KLASSE 1
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

TABLE OF CONTENTS

SERVICE NOTE

1. Note on Removing the Upper Case 5
2. Disc Removal Procedure 5
3. Note on Removing the Table Ass'y 5
4. Note on Mounting the Gears 6
5. How to Service the MB-108 Board 7
6. Connection of Service Jig 9

1. GENERAL

Precautions 1-1
About this Manual 1-1
This Player Can Play the Following Discs 1-1
Notes about the Discs 1-1
Index to Parts and Controls 1-2
Guide to On-Screen Displays (Control Bar) 1-3
Simple Start Guide 1-3
Quick Overview 1-3
Step 1: Unpacking 1-3
Step 2: Inserting Batteries into the Remote 1-3
Step 3: TV Hookups 1-3
Step 4: Playing a Disc 1-4
Hookups 1-4
Hooking Up the Player 1-4
Step 1: Connecting the Video Cords 1-4
Step 2: Connecting the Audio Cords 1-4
Step 3: Connecting the Power Cord 1-6
Step 4: Quick Setup 1-6
Playing Discs 1-6
Playing Discs 1-6
Searching for a Particular Point on a Disc (Scan, Slow-motion Play, Search, Freeze Frame) ... 1-7
Resuming Playback from the Point Where You Stopped the Disc (Resume Play/Multi-disc Resume) 1-7
Using the DVD's Menu 1-8
Playing VIDEO CDs with PBC Functions (PBC Playback) 1-8
Playing an MP3 Audio Track 1-8
Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play) 1-9
Searching for a Scene 1-10
Searching for a Title/Chapter/Track/Index/Scene (Search mode) 1-10
Viewing Information About the Disc 1-10
Checking the Playing Time and Remaining Time 1-10
Sound Adjustments 1-11
Changing the Sound 1-11
TV Virtual Surround Settings (TVS) 1-11
Enjoying Movies 1-12
Changing the Angles 1-12
Displaying the Subtitles 1-12
Adjusting the Picture Quality (BNR) 1-12
Adjusting the Playback Picture (CUSTOM PICTURE MODE) 1-12
Enhancing the Playback Picture (DIGITAL VIDEO ENHANCER) 1-13
Using Various Additional Functions 1-13
Locking Discs (CUSTOM PARENTAL CONTROL, PARENTAL CONTROL) 1-13
Controlling Your TV with the Supplied Remote 1-14
Settings and Adjustments 1-15
Using the Setup Display 1-15
Setting the Display or Sound Track Language (LANGUAGE SETUP) 1-15
Settings for the Display (SCREEN SETUP) 1-15
Custom Settings (CUSTOM SETUP) 1-15
Settings for the Sound (AUDIO SETUP) 1-16
Additional Information 1-16
Troubleshooting 1-16
Self-diagnosis Function (When letters/numbers appear in the display) 1-17
Glossary 1-17
Language Code List 1-18

2. DISASSEMBLY

2-1. Disassembly 2-1
2-2. Upper Case 2-1
2-3. Front Panel Section 2-2
2-4. Rear Panel 2-2
2-5. MB-108 Board 2-3
2-6. DV-034 Board 2-3
2-7. AV-072 Board 2-4
2-8. ER-14 Board (AEP, UK) 2-4
2-9. Table Ass'y 2-4
2-10. Loading Motor Ass'y 2-5
2-11. Optical Pick-Up 2-5
2-12. Power Block 2-6
2-13. IF-099 and FR-197 Boards 2-6
2-14. Internal Views 2-7
2-15. Circuit Boards Location 2-8

3. BLOCK DIAGRAMS

3-1. Overall Block Diagram 3-1
3-2. System Control Block Diagram 3-3
3-3. RF/Servo Block Diagram 3-5
3-4. Signal Processor Block Diagram 3-7
3-5. Audio Block Diagram 3-9
3-6. Video Block Diagram (NC625) 3-11
3-7. Video Block Diagram (NC665P) 3-13
3-8. Interface Control Block Diagram 3-15
3-9. Power Block Diagram (1/3) 3-17
3-10. Power Block Diagram (2/3) 3-19
3-11. Power Block Diagram (3/3) 3-21

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. Frame Schematic Diagram 4-1
4-2. Printed Wiring Boards and Schematic Diagram 4-3
Waveforms 4-5
- MB-108 (DVD/CD RF AMP,Digital Servo, Motor Drive,Servo,AV Decoder,SD RAM, System Control,Audio DAC,PLL) Printed Wiring Board 4-7
- MB-108 (System Control) (1/6) Schematic Diagram 4-9
- MB-108 (Motor Drive) (2/6) Schematic Diagram 4-11
- MB-108 (Servo) (3/6) Schematic Diagram 4-13
- MB-108 (AV Decoder) (4/6) Schematic Diagram 4-15
- MB-108 (1/P Converter) (5/6) Schematic Diagram 4-17
- MB-108 (Audio DAC, PLL) (6/6) Schematic Diagram 4-19
- AV-072 (Audio Out, Video Out) Printed Wiring Board 4-25
- AV-072 (Audio Out) (1/2) Schematic Diagram 4-27
- AV-072 (Video Out) (2/2) Schematic Diagram 4-29

- ER-14 (Line1 Out)
  Printed Wiring Board 4-33
- ER-14 Board (AEP,UK Model only)
  Line1 Out Schematic Diagram 4-35
- IF-099 (If Com) Printed Wiring Board 4-37
- IF-099 (If Com) (1/2) Schematic Diagram 4-39
- IF-099 (If Com) (2/2) Schematic Diagram 4-41
- PL-032 (Led), SW-385 (Switch)
  Printed Wiring Boards 4-43
- PL-032 (Led), SW-385 (Switch)
  Schematic Diagrams 4-45
- FR-197 (Function SW/Led)
  Printed Wiring Board 4-47
- FR-197 (Function SW/Led)
  Schematic Diagram 4-49
- DV-034 (Connector)
  Printed Wiring Board 4-51
- DV-034 (Connector) Schematic Diagram 4-53
- SE-130 (Sensor), MD-94 (MD Interface)
  Printed Wiring Board 4-55
- SE-130 (Sensor), MD-94 (MD Interface)
  Schematic Diagram 4-57
- ETXNY410M0F (Switching Regulator)
  Printed Wiring Board 4-59
- ETXNY410M0F (Switching Regulator)
  Schematic Diagram 4-61
- DPS-21BP (Switching Regulator)
  Printed Wiring Board 4-63
- DPS-21BP (Switching Regulator)
  Schematic Diagram 4-65

5. IC PIN FUNCTION DESCRIPTION

5-1. System Control Pin Function
(MB-108 Board IC104:
MB91307RPFV-G-BND-E1) 5-1

6. TEST MODE

6-1. General Description 6-1
6-2. Starting Test Mode 6-1
6-3. Syscon Diagnosis 6-1
6-4. Drive Auto Adjustment 6-5
6-5. Drive Manual Operation 6-7
6-6. Mecha Aging 6-11
6-7. Emergency History 6-11
6-8. Version Infromation 6-11
6-9. Video Level Adjustment 6-11
6-10. If Con Self Diagnostic Function 6-12
6-11. Troubleshooting 6-19
6-12. Mechanism Test Mode Adjustment 6-22
6-12-1. How to enter the mechanism test mode 6-22
6-12-2. Types of the mechanism test mode 6-22
6-12-3. Description of Each Mode 6-22

7. ELECTRICAL ADJUSTMENT

7-1. Power Supply Adjustment 7-1
7-2. Adjustment of Video System 7-2
  1. Video Level Adjustment (MB-108 Board) 7-2
  2. Progressive Video Output Level Adjustment
     (MB-108 Board) 7-2
  3. Checking S Video Output S-Y 7-2
  4. Checking S Video Output S-C 7-2
  5. Checking Component Video Output Y
     (US, Canadian, Australian, PX Model) 7-3
  6. Checking Component Video Output B-Y
     (US, Canadian, Australian, PX Model) 7-3
  7. Checking Component Video Output R-Y
     (US, Canadian, Australian, PX Model) 7-3
  8. Checking RGB Output R (AEP, UK Model) 7-3
  9. Checking RGB Output G (AEP, UK Model) 7-4
  10. Checking RGB Output B (AEP, UK Model) 7-4
7-3. Adjustment Related Parts Arrangement 7-5

8. REPAIR PARTS LIST

8-1. Exploded Views 8-1
  8-1-1. Overall Section 8-2
  8-1-2. Front Panel Section 8-3
  8-1-3. Loading Section 8-4
  8-1-4. Chassis Section 8-5
8-2. Electrical Parts List 8-6

SERVICE NOTE

1. NOTE ON REMOVING THE UPPER CASE

1) Remove the four tapping screws and three screws. (See Fig. 1)
2) Open the sides of case. (See Fig. 1)
3) Remove the upper case in the direction of the arrow Ⓐ.

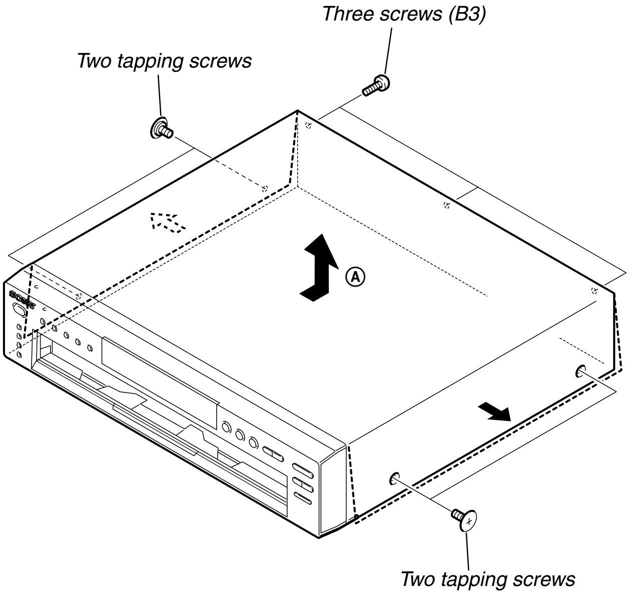


Fig. 1.

2. DISC REMOVAL PROCEDURE

1) Insert a flat-head (-) screwdriver into a hole at the bottom, and rotate the cam gear in the direction of the arrow Ⓐ. (See Fig.2)

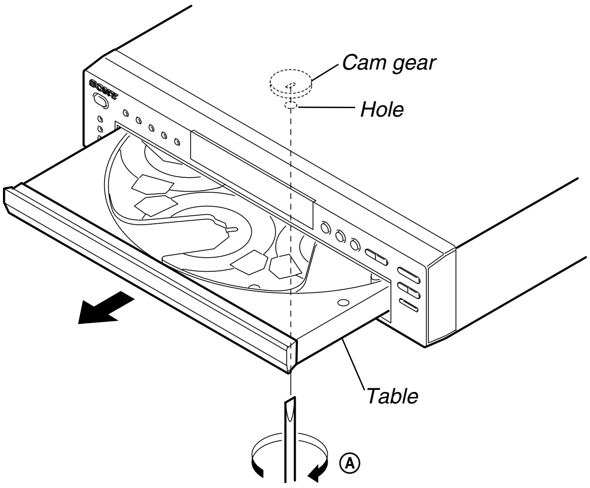


Fig. 2.

3. NOTE ON REMOVING THE TABLE ASS'Y

1) Remove the two screws. (See Fig. 3)

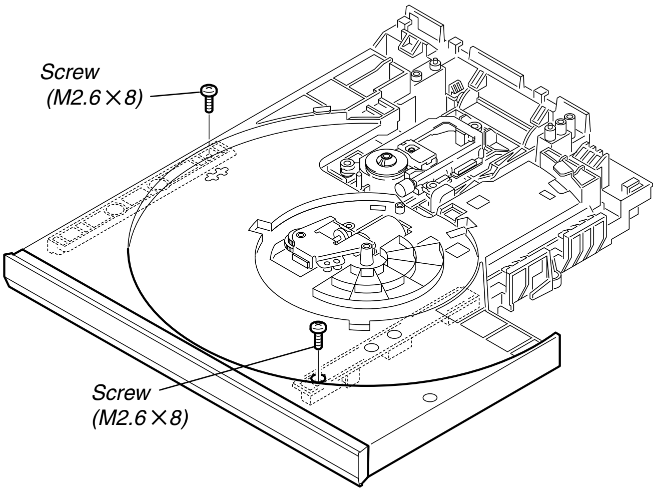


Fig. 3.

2) Remove the two Plates (guide) in the direction of the arrows Ⓐ and Ⓑ.
3) Remove the Table ass'y in the direction of the arrow Ⓒ.
4) Remove the Flexible flat cable (See Fig. 4).

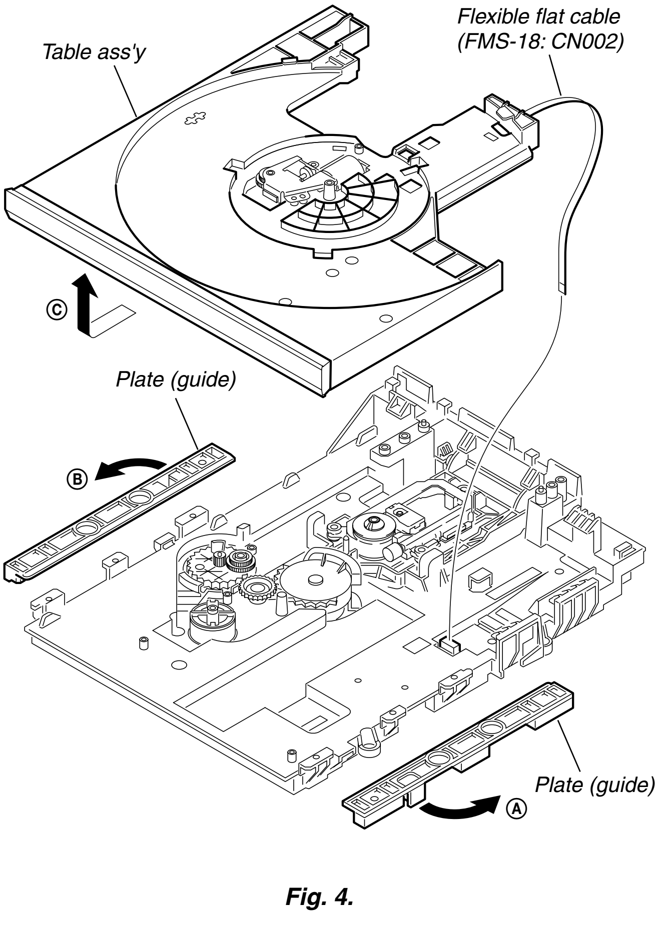


Fig. 4.

4. NOTE ON MOUNTING THE GEARS

1) Mount the gear (chuck). (See Fig. 5)
2) Rotate the gear (chuck) in the direction of the arrow. (down position) (See Fig. 5)

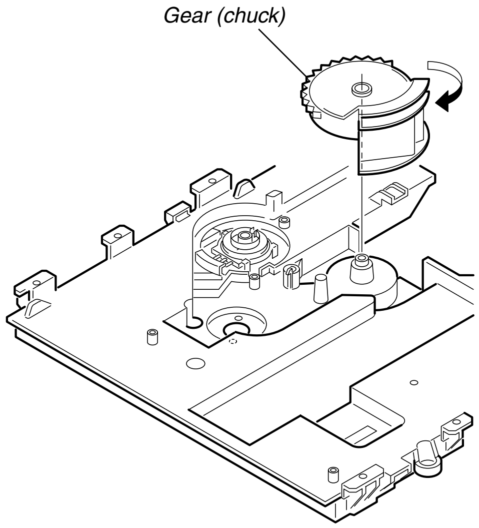


Fig. 5.

3) Connect the boss of the gear (swing) with the groove of the rotary encoder and mount the gear (swing). (See Fig. 6)
4) Align triangle mark of the chassis with the groove of the gear (swing).

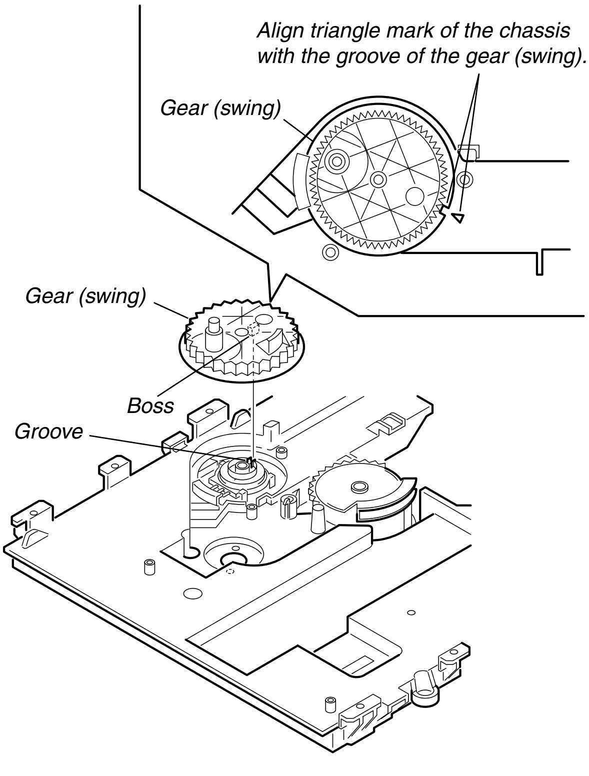

Align triangle mark of the chassis with the groove of the gear (swing).
Gear (swing)
Gear (swing)
Boss
Groove

Fig. 6.

5) Mount the gear (idler) while aligning the engagement of the gear (swing) and the gear (chuck). (See Fig. 7)

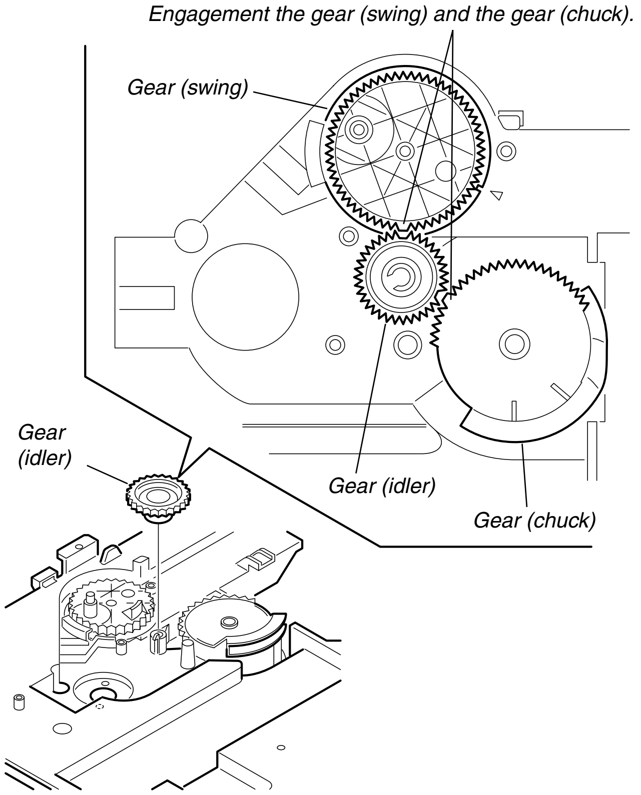


Fig. 7.

5. HOW TO SERVICE THE MB-108 BOARD

Jig

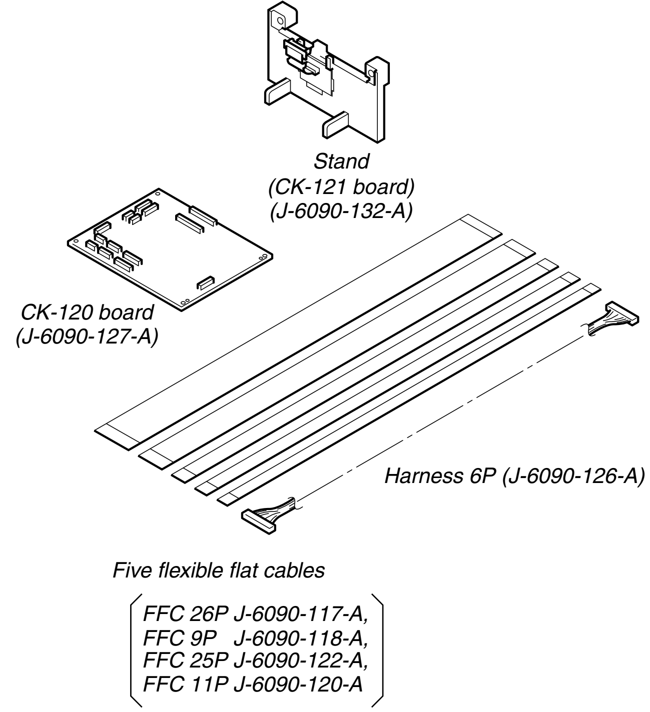


Fig. 8.

1) Remove the upper case from the set. (Refer to section 2-1)
2) Remove the MB-108 board. (Refer to section 2-4)
3) Set the MB-108 board in the stand (with CK-121 board) as shown in Fig. 9.

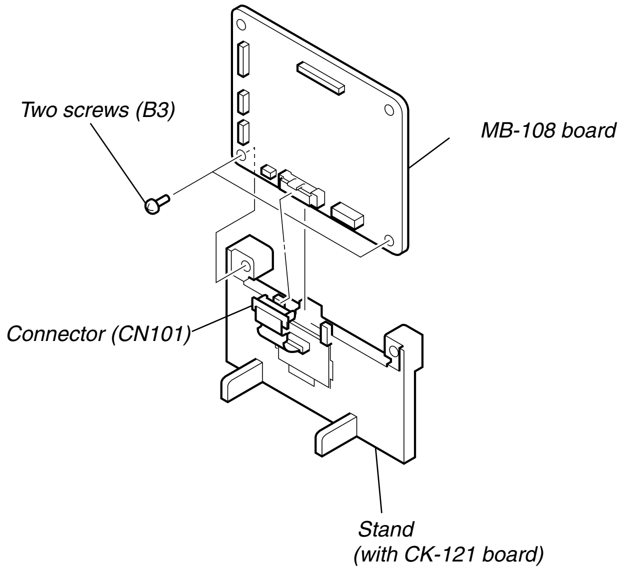


Fig. 9.

4) Set the CK-120 board in the place where the MB-108 board is removed, as shown in Fig. 10.

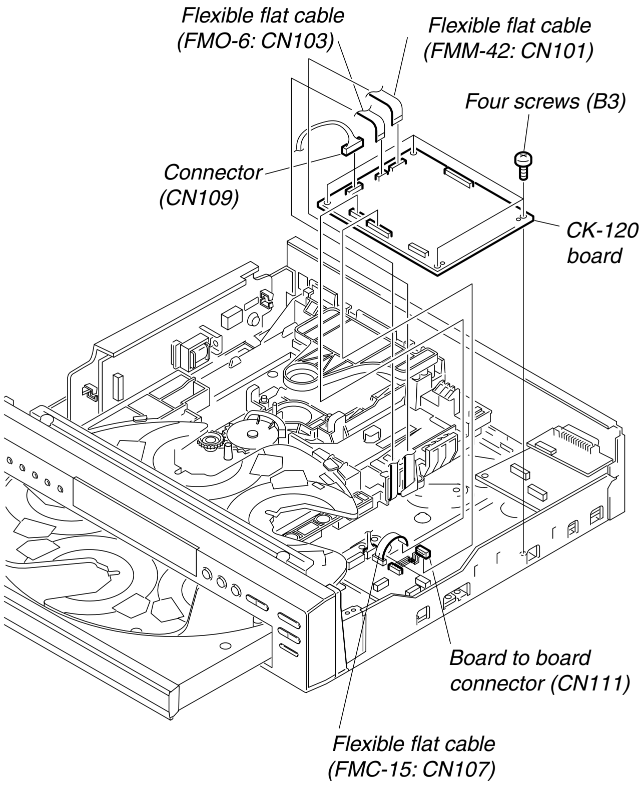


Fig. 10.

5) Set the four flexible flat cables as shown in Fig. 11.

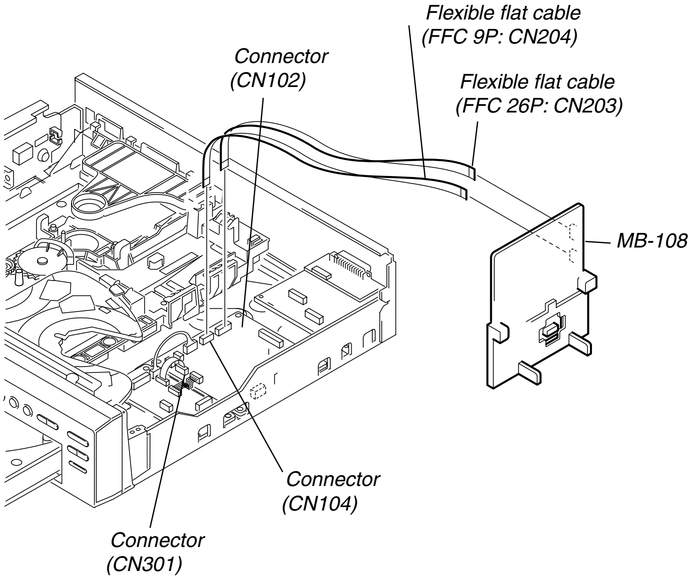


Fig. 11.

6) Set the flexible flat cable and the harness as shown in Fig. 12.

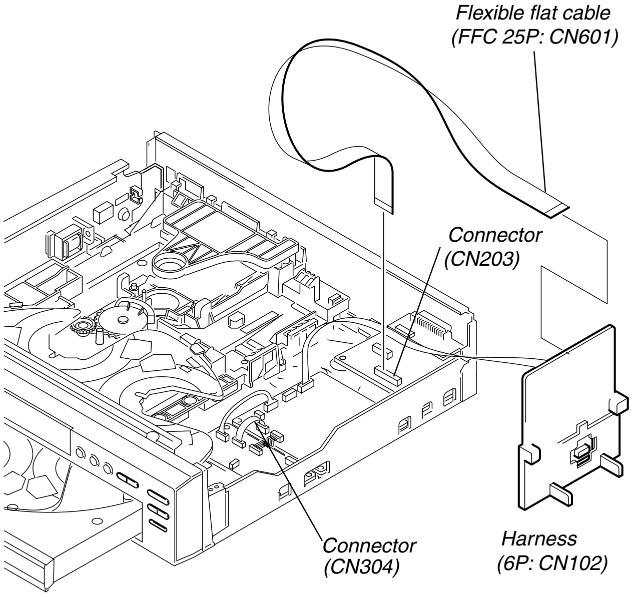
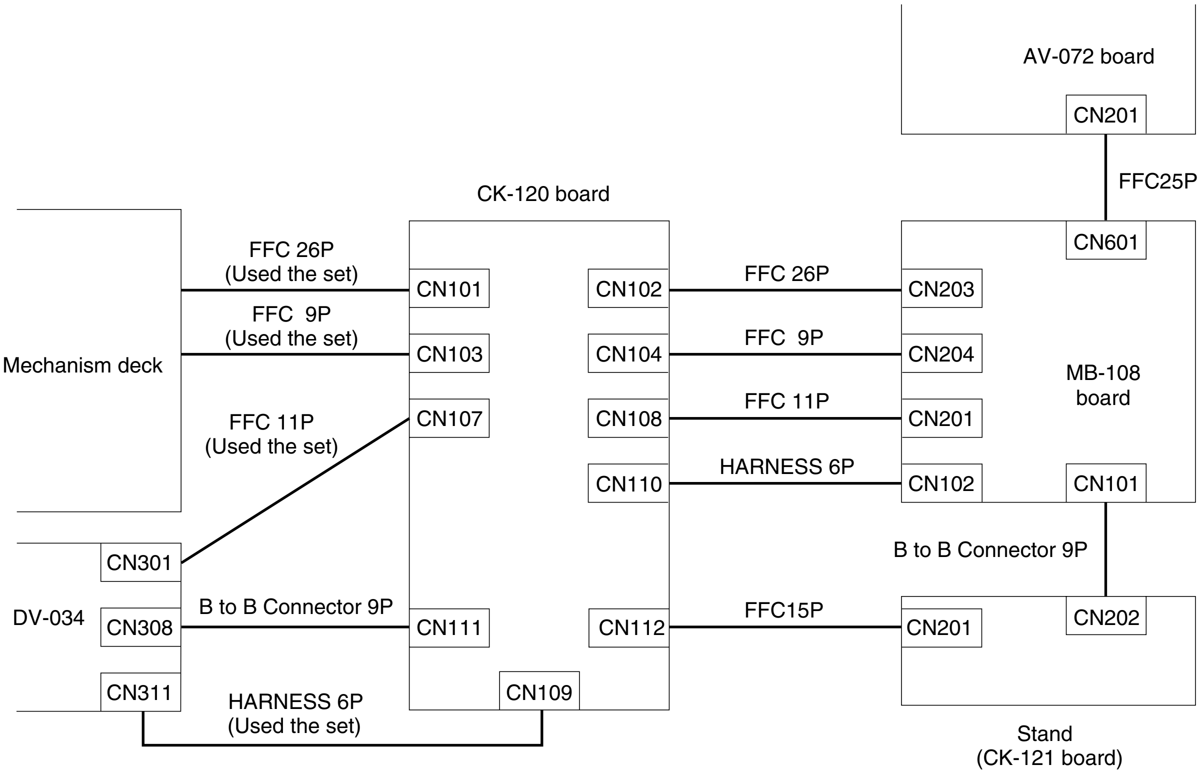


Fig. 12.

7) Set is finished.

6. CONNECTION OF SERVICE JIG



MEMO

SECTION 1
GENERAL

This section is extracted from instruction manual. (DVP-NC665P : 3-081-946-21)

Precautions

On safety

- Caution – The use of optical instruments with this product will increase eye hazard.
- To prevent fire or shock hazard, do not place objects filled with liquids, such as vases, on the apparatus.
- Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources

- The player is not disconnected from the AC power source as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord, grasp the plug itself; never pull the cord.

On placement

- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug that might block the ventilation holes.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust, or mechanical shock.
- Do not install the player in an inclined position. It is designed to be operated in a horizontal position only.
- Do not place heavy objects on the player.

On operation

- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.
- When you move the player, take out any discs. If you don't, the disc may be damaged.

On adjusting volume

Do not turn up the volume while listening to a section with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level section is played.

On cleaning

Clean the cabinet, panel, and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

On cleaning discs

Do not use a commercially available cleaning disc. It may cause a malfunction.

IMPORTANT NOTICE

Caution: This player is capable of holding a still video image or on-screen display image on your television screen indefinitely. If you leave the still video image or on-screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Plasma Display Panel television and projection televisions are especially susceptible to this.

On transporting the player

Before transporting the player, follow the procedure below to return the internal mechanisms to their original positions.

1. Remove all the discs from the disc tray.
2. Press ≜ to close the disc tray.
   Make sure that "NO DISC" appears on the front panel display.
3. Press I/⏻ to turn off the player.
   The player enters standby mode.
4. Disconnect the AC power cord.

If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

About this Manual

- Instructions in this manual describe the controls on the remote. You can also use the controls on the player if they have the same or similar names as those on the remote.
- "DVD" may be used as a general term for DVD VIDEOs, DVD-RWs/DVD-Rs and DVD+RWs/DVD+Rs.
- The meaning of the icons used in this manual is described below:

Icon	Meaning
DVD-V	Functions available for DVD VIDEOs and DVD-RWs/ DVD-Rs in video mode or DVD+RWs/DVD+Rs
DVD-RW	Functions available for DVD-RWs in VR (Video Recording) mode
VCD	Functions available for VIDEO CDs, Super VCDs or CD-Rs/ CD-RWs in video CD format or Super VCD format
DATA CD	Functions available for DATA CDs (CD-ROMs/CD-Rs/CD-RWs containing MP3* audio tracks)
CD	Functions available for music CDs or CD-Rs/CD-RWs in music CD format

* MP3 (MPEG1 Audio Layer 3) is a standard format defined by ISO (International Standard Organization)/MPEG which compresses audio data.

This Player Can Play the Following Discs

Format of discs	
DVD VIDEO (page 72)	DVD VIDEO
DVD-RW (page 72)	DVD RW
VIDEO CD	COMPACT disc DIGITAL VIDEO
Music CD	COMPACT disc DIGITAL AUDIO

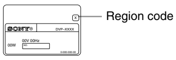
"DVD VIDEO" and "DVD-RW" are trademarks.

Region code

Your player has a region code printed on the back of the unit and only will play DVD VIDEO discs (playback only) labeled with identical region codes. This system is used to protect copyrights.

DVD VIDEOs labeled ALL will also play on this player.

If you try to play any other DVD VIDEO, the message "Playback prohibited by area limitations." will appear on the TV screen. Depending on the DVD VIDEO, no region code indication may be labeled even though playing the DVD VIDEO is prohibited by area restrictions.



Example of discs that the player cannot play

The player cannot play the following discs:
- All CD-ROMs (including PHOTO CDs)/ CD-Rs/CD-RWs other than those recorded in the following formats:
  - –music CD format
  - –video CD format

  - –MP3 format that conforms to ISO9660* Level 1/Level 2, or its extended format, Joliet
- Data part of CD-Extras
- DVD-ROMs
- DVD Audio discs
- HD layer on Super Audio CDs

* A logical format of files and folders on CD-ROMs defined by ISO (International Standard Organization).

Also, the player cannot play the following discs:
- A DVD VIDEO with a different region code.
- A disc recorded in a color system other than NTSC, such as PAL or SECAM (this player conforms to the NTSC color system).
- A disc that has a non-standard shape (e.g., card, heart).
- A disc with paper or stickers on it.
- A disc that has the adhesive of cellophane tape or a sticker still left on it.

Notes

- **Notes about DVD-RWs/DVD-Rs, DVD+RWs/ DVD+Rs or CD-Rs/CD-RWs**
  Some DVD-RWs/DVD-Rs, DVD+RWs/ DVD+Rs, or CD-Rs/CD-RWs cannot be played on this player due to the recording quality or physical condition of the disc, or the characteristics of the recording device and authoring software.
  The disc will not play if it has not been correctly finalized. Also, images in DVD-RW discs with CPRM* protection may not be played if they contain a copy protection signal. "Copyright lock" appears on the screen. For more information, see the operating instructions for the recording device.
  Note that discs created in the Packet Write format cannot be played.
  * CPRM (Content Protection for Recordable Media) is a coding technology that protects copyright for images.
- **Music discs encoded with copyright protection technologies**
  This product is designed to playback discs that conform to the Compact Disc (CD) standard. Recently, various music discs encoded with copyright protection technologies are marketed by some record companies. Please be aware that among those discs, there are some that do not conform to the CD standard and may not be playable by this product.

Note on playback operations of DVDs and VIDEO CDs

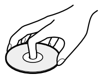
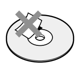
Some playback operations of DVDs and VIDEO CDs may be intentionally set by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, refer to the instructions supplied with the DVDs or VIDEO CDs.

Copyrights

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents, other intellectual property rights owned by Macrovision Corporation, and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes about the Discs

- To keep the disc clean, handle the disc by its edge. Do not touch the surface.

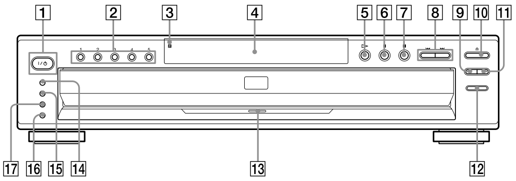
- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
- After playing, store the disc in its case.
- Clean the disc with a cleaning cloth. Wipe the disc from the center out.

- Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.

Index to Parts and Controls

For more information, refer to the pages indicated in parentheses.

Front panel

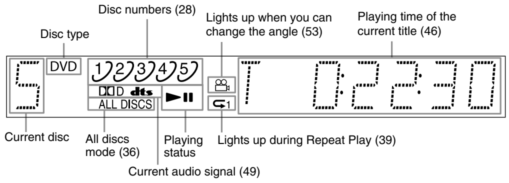


1 I/⏻ (on/standby) button (27)
2 DISC SELECT 1 – 5 buttons (28)
3 ℝ (remote sensor) (15)
4 Front panel display (9)
5 ▷ (playback) button (27)
The ▷ button has a tactile dot.*
6 ❚❚ (pause) button (28)
7 ■ (stop) button (28)
8 ⏮/⏭ (previous/next) buttons (28)
9 EXCHANGE button (29)
10 ≜ (open/close) button (27)
11 DISC SKIP button (27)
12 PROGRESSIVE button (18, 24)
13 PROGRESSIVE indicator (18)
14 PICTURE MODE button (55)
15 SURROUND button (51)
16 ONE/ALL button (36)
17 LOAD button (28)

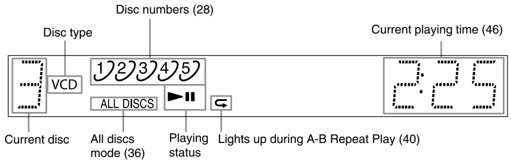
* Use the tactile dot as a reference when operating the player.

Front panel display

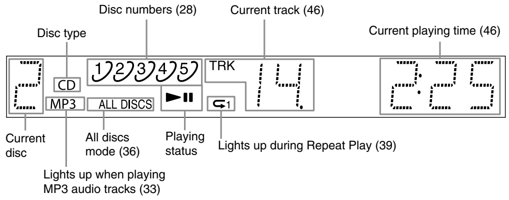
When playing back a DVD VIDEO/DVD-RW


Disc numbers (28)
Disc type
Lights up when you can change the angle (53)
Playing time of the current title (46)
DVD
1 2 3 4 5
ALL DISCS
Current disc
All discs mode (36)
Playing status
Lights up during Repeat Play (39)
Current audio signal (49)

When playing back a VIDEO CD with Playback Control (PBC) (32)

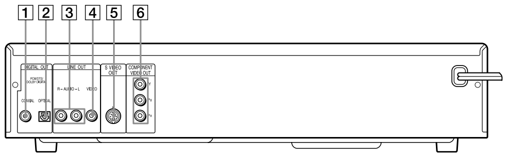


When playing back a CD, DATA CD (MP3 audio), or VIDEO CD (without PBC)



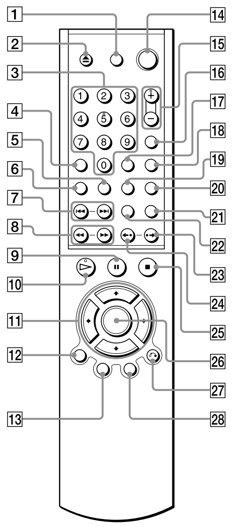
→ continued

Rear panel



1 DIGITAL OUT (COAXIAL) jack (21) (22) (23)
2 DIGITAL OUT (OPTICAL) jack (21) (22) (23)
3 LINE OUT L/R (AUDIO) jack (20) (21) (22)
4 LINE OUT (VIDEO) jack (16)
5 S VIDEO OUT jack (16)
6 COMPONENT VIDEO OUT (Y, PB, PR) jacks (16)

Remote



1 TV I/⏻ (on/standby) button (62)
2 ⏏ OPEN/CLOSE button (27)
3 Number buttons (31)
The number 5 button has a tactile dot.*
4 CLEAR button (36)
5 SUBTITLE button (53)
6 AUDIO button (49)
7 ⏮/⏭ PREV (previous) /NEXT buttons (28)
8 ◀I ◀◀/I▶ ▶▶ SCAN/SLOW buttons (41)
9 ❚❚ PAUSE button (28)
10 ▷ PLAY button (27)
The ▷ button has a tactile dot.*
11 ←/↑/↓/→ buttons (31)
12 DISPLAY button (12)
13 TOP MENU button (31)
14 I/⏻ (on/standby) button (27)
15 VOL (volume) +/– buttons (62)
The + button has a tactile dot.*
16 TV/VIDEO button (62)
17 TIME/TEXT button (45)
18 DISC SKIP button (27)
19 ANGLE button (53)
20 SUR (surround) button (51)
21 PICTURE NAVI (picture navigation) button (44)
22 REPEAT button (39)
23 •→/II▶ INSTANT SEARCH/STEP button (28, 41)
24 ←•/◀II INSTANT REPLAY/STEP button (28, 41)
25 ■ STOP button (28)
26 ENTER button (24)
27 ↶ RETURN button (29)
28 MENU button (31) (33)

* Use the tactile dot as a reference when operating the player.

Guide to the Control Menu Display

Use the Control Menu to select a function and to view related information. Press DISPLAY repeatedly to turn on or change the Control Menu display as follows:

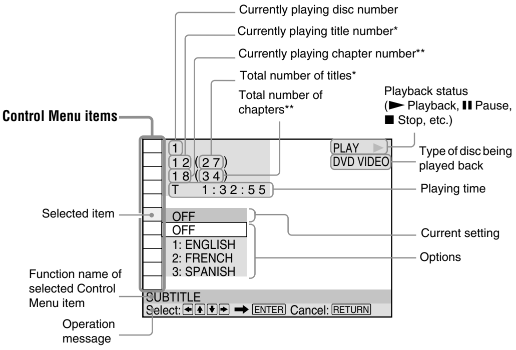
Control Menu display 1
↓
Control Menu display 2 (DVD/VIDEO CD only)
↓
ADVANCED display (DVD only, see page 47.)
↓
Control Menu display off

Hint
You can skip the ADVANCED display by setting "OFF" under "ADVANCED" in the Control Menu (page 47).

Control Menu

The Control Menu display 1 and 2 will show different items depending on the disc type. For details, please refer to the pages in parentheses.

Example: Control Menu display 1 when playing a DVD VIDEO


Currently playing disc number
Currently playing title number*
Currently playing chapter number**
Total number of titles*
Total number of chapters**
Playback status (▶ Playback, ❚❚ Pause, ■ Stop, etc.)
Control Menu items
1
12 (27)
18 (34)
T 1:32:55
PLAY
DVD VIDEO
Type of disc being played back
Playing time
Selected item
OFF
OFF
1: ENGLISH
2: FRENCH
3: SPANISH
Current setting
Options
Function name of selected Control Menu item
SUBTITLE
Select: ←↑↓→ ➡ ENTER Cancel: RETURN
Operation message

---

* Displays the scene number for VIDEO CDs (PBC is on), track number for VIDEO CDs/CDs, album number for DATA CDs.

** Displays the index number for VIDEO CDs/CDs, MP3 audio track number for DATA CDs.

List of Control Menu Items

Item	Item Name, Function, Relevant Disc Type
	DISC (page 42) Selects the disc to be played. DVD-V DVD-RW VCD CD DATA CD
	TITLE (page 42)/SCENE (page 42)/TRACK (page 42) Selects the title, scene, or track to be played. DVD-V DVD-RW VCD
	CHAPTER (page 42)/INDEX (page 42) Selects the chapter or index to be played. DVD-V DVD-RW VCD
	ALBUM (page 42) Selects the album to be played. DATA CD
	TRACK (page 42) Selects the track to be played. CD DATA CD
	INDEX (page 42) Selects the index to be played. CD
	ORIGINAL/PLAY LIST (page 31) Selects the type of titles (DVD-RW) to be played, the ORIGINAL one, or an edited PLAY LIST. DVD-RW
	TIME/TEXT (page 42) Checks the elapsed time and the remaining playback time. Input the time code for picture and music searching. Displays the DVD/CD text or the DATA CD's track name. DVD-V DVD-RW VCD CD DATA CD
	AUDIO (page 49) Changes the audio setting. DVD-V DVD-RW VCD CD DATA CD
	SUBTITLE (page 53) Displays the subtitles. Changes the subtitle language. DVD-V DVD-RW
	ANGLE (page 53) Changes the angle. DVD-V
	TVS (TV Virtual Surround) (page 51) Selects the surround functions. DVD-V
	ADVANCED (page 47) Displays the information (bit rate or layer) of the disc currently playing. DVD-V DVD-RW
	PARENTAL CONTROL (page 58) Set to prohibit playback on this player. DVD-V VCD CD
	SETUP (page 63) QUICK Setup (page 24) Use Quick Setup to choose the desired language of the on-screen display, the aspect ratio of the TV and the audio output signals. CUSTOM Setup In addition to the Quick Setup setting, you can adjust other various settings. RESET Returns the settings in "SETUP" to the default setting. DVD-V DVD-RW VCD CD DATA CD

→ continued

	ALL DISCS/ONE DISC (page 36) Selects All Discs or One Disc mode. DVD-V DVD-RW VCD CD DATA CD
	PROGRAM (page 36) Selects the disc, title, chapter, or track to play in the order you want. DVD-V VCD CD
	SHUFFLE (page 38) Plays the disc, title, chapter, or track in random order. DVD-V DVD-RW VCD CD DATA CD
	REPEAT (page 39) Plays the entire disc (all titles/all tracks/all albums) repeatedly or one title/chapter/track/album repeatedly. DVD-V DVD-RW VCD CD DATA CD
	A-B REPEAT (page 40) Specifies the parts you want to play repeatedly. DVD-V DVD-RW VCD CD
	BNR (page 54) Adjusts the picture quality by reducing the "block noise" or mosaic like patterns that appear on your TV screen. DVD-V DVD-RW VCD
	CUSTOM PICTURE MODE (page 55) Adjusts the video signal from the player. You can select the picture quality that best suits the program you are watching. DVD-V DVD-RW VCD
	DIGITAL VIDEO ENHANCER (page 56) Exaggerates the outline of the image to produce a sharper picture. DVD-V DVD-RW VCD
	PICTURE NAVIGATION (page 44) Divides the screen into 9 subscreens to help you find the scene you want quickly. DVD-V VCD

Hint

The Control Menu icon indicator lights up in green → when you select any item except "OFF." ("TVS," "PROGRAM," "SHUFFLE," "REPEAT," "A-B REPEAT," "BNR," "DIGITAL VIDEO ENHANCER" only). The "ANGLE" indicator lights up in green only when the angles can be changed. The "CUSTOM PICTURE MODE" indicator lights up in green when any setting other than "STANDARD" is selected.

Hookups

Hooking Up the Player

Follow Steps 1 to 6 to hook up and adjust the settings of the player.

Notes

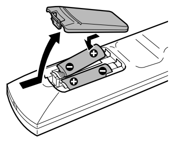
- Plug cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.
- You cannot connect this player to a TV that does not have a video input jack.
- Be sure to disconnect the power of each component before connecting.

Step 1: Unpacking

Check that you have the following items:
- Audio/video cord (pinplug × 3 ↔ pinplug × 3) (1)
- Remote commander (remote) (1)
- Size AA (R6) batteries (2)

Step 2: Inserting Batteries into the Remote

You can control the player using the supplied remote. Insert two Size AA (R6) batteries by matching the ⊕ and ⊖ ends on the batteries to the markings inside the compartment. When using the remote, point it at the remote sensor on the player.



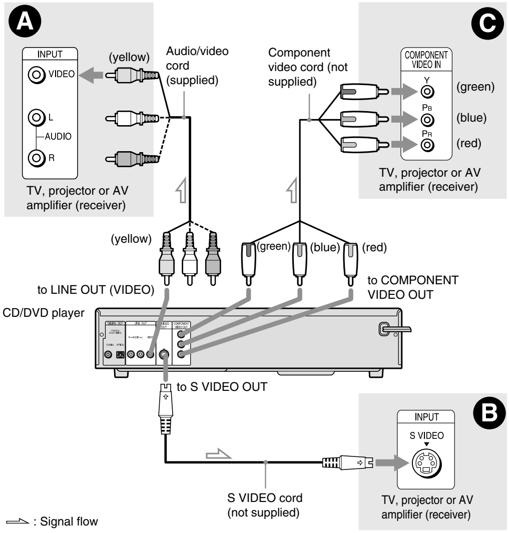
Notes

- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct light from the sun or a lighting apparatus. Doing so may cause a malfunction.
- If you do not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

→ continued

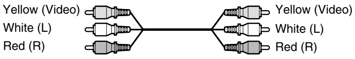
Step 3: Connecting the Video Cords

Connect this player to your TV monitor, projector, or AV amplifier (receiver) using a video cord. Select one of the patterns Ⓐ through Ⓒ, according to the input jack on your TV monitor, projector, or AV amplifier (receiver).


A
INPUT
VIDEO
L
AUDIO
R
TV, projector or AV amplifier (receiver)
(yellow)
Audio/video cord (supplied)
Component video cord (not supplied)
C
COMPONENT VIDEO IN
Y
PB
PR
(green)
(blue)
(red)
TV, projector or AV amplifier (receiver)
(yellow)
(green)
(blue)
(red)
to LINE OUT (VIDEO)
to COMPONENT VIDEO OUT
CD/DVD player
to S VIDEO OUT
B
INPUT
S VIDEO
TV, projector or AV amplifier (receiver)
S VIDEO cord (not supplied)
: Signal flow

Ⓐ If you are connecting to a video input jack

Connect the yellow plug of the audio/video cord (supplied) to the yellow (video) jacks. You will enjoy standard quality images.



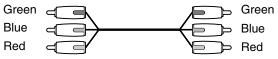
Use the red and white plugs to connect to the audio input jacks (page 20). (Do this if you are connecting to a TV only.)

Ⓑ If you are connecting to an S VIDEO input jack

Connect an S VIDEO cord (not supplied). You will enjoy high quality images.

Ⓒ If you are connecting to a monitor, projector, or AV amplifier (receiver) having component video input jacks (Y/P_B/P_R)

Connect the component via the COMPONENT VIDEO OUT jacks using a component video cord (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate color reproduction and high quality images. If your TV accepts progressive (480p) format signals, you must use this connection and then press PROGRESSIVE on the front panel to accept progressive video signals. See “Using the PROGRESSIVE button” on the next page for more information.

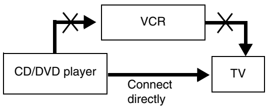


When connecting to a wide screen TV

Depending on the disc, the image of some discs may not fit your TV screen. If you want to change the aspect ratio, please refer to page 65.

Notes

- Connect the player directly to the TV. If you pass the player signals via the VCR, you may not receive a clear image on the TV screen.



- Consumers should note that not all high definition television sets are fully compatible with this product and may cause artifacts to be displayed in the picture. In the case of 480 progressive scan picture problems, it is recommended that you switches the connection to the standard definition output. If there are questions regarding your Sony TV set’s compatibility with this model 480p DVD player, please contact our customer service center.

→ continued

Using the PROGRESSIVE button

You can fine-tune the Progressive 480p video signal output when you press PROGRESSIVE on the front panel (the PROGRESSIVE indicator lights up in blue) and connect the player using the COMPONENT VIDEO OUT jacks to a TV that is able to accept the video signal in progressive format.

◆ Conversion Modes

DVD software can be divided into two types: film based software and video based software. Video based software is derived from the TV, such as dramas and sit-coms, and displays images at 30 frames/60 fields per second. Film based software is derived from film and displays images at 24 frames per second. Some DVD software contains both Video and Film.
In order for these images to appear natural on your screen when output in PROGRESSIVE mode (60 frames per second), the progressive video signal needs to be converted to match the type of DVD software that you are watching.
Press PROGRESSIVE repeatedly to turn or change the displays as follows:

→ NORMAL (INTERLACE)*
↓
PROGRESSIVE AUTO*
↓
PROGRESSIVE VIDEO*
↓
PROGRESSIVE FILM*

* Appears as NORMAL, P AUTO, P VIDEO, or P FILM on the front panel display

- NORMAL (INTERLACE)
  Select this when you are connected to a standard (Interlace format) TV.

- PROGRESSIVE AUTO
  Select this when you are connected to a progressive TV. This will automatically detect if you are playing Film based or Video based software and convert the signal to the appropriate conversion mode. Normally select this position when you are connected to a progressive TV.

- PROGRESSIVE VIDEO
  Select this when you are connected to a progressive TV. This will set the conversion mode for Video based software, regardless of the type of software that you are playing.

- PROGRESSIVE FILM
  Select this when you are connected to a progressive TV. This will set the conversion mode for Film based software, regardless of the type of software that you are playing.

Notes

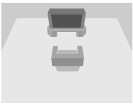
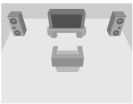
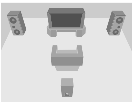
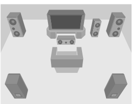
- When you select PROGRESSIVE FILM, the progressive format images may become unclear or unnatural. If this happens, select PROGRESSIVE VIDEO.
- When you play video based software with progressive signals, sections of some types of images may appear unnatural due to the conversion process when output through the COMPONENT VIDEO OUT jacks. Images from the S VIDEO OUT and LINE OUT (VIDEO) jacks are unaffected as they are output in the normal (interlace) format.

Step 4: Connecting the Audio Cords

Refer to the chart below to select the connection that best suits your system. Be sure to also read the instructions for the components you wish to connect.

Select a connection

Select one of the following connections, Ⓐ through Ⓓ.

Components to be connected	Connection	Your setup
TV • Surround effects: TVS DYNAMIC (page 51), TVS WIDE (page 51)	Ⓐ (page 20)	Example 
Stereo amplifier (receiver) and two speakers • Surround effects: TVS STANDARD (page 52) or **MD deck/DAT deck** • Surround effects: TVS STANDARD (page 52)	Ⓑ (page 21)	Example 
AV amplifier (receiver) having a Dolby* Surround (Pro Logic) decoder and 3 to 6 speakers • Surround effects: Dolby Surround (Pro Logic) (page 68)	Ⓒ (page 22)	Example 
AV amplifier (receiver) with a digital input jack having a Dolby Digital or DTS decoder and 6 speakers** • Surround effects: Dolby Digital (5.1ch) (page 68), DTS (5.1ch) (page 68)	Ⓓ (page 23)	Example 

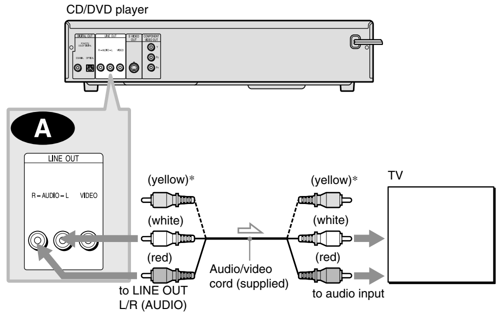
* Manufactured under license from Dolby Laboratories. “Dolby,” “Pro Logic,” and the double-D symbol are trademarks of Dolby Laboratories.

** “DTS” and “DTS Digital Out” are trademarks of Digital Theater Systems, Inc.

→ continued

Ⓐ Connecting to your TV

This connection will use your TV speakers for sound.



⇨ : Signal flow

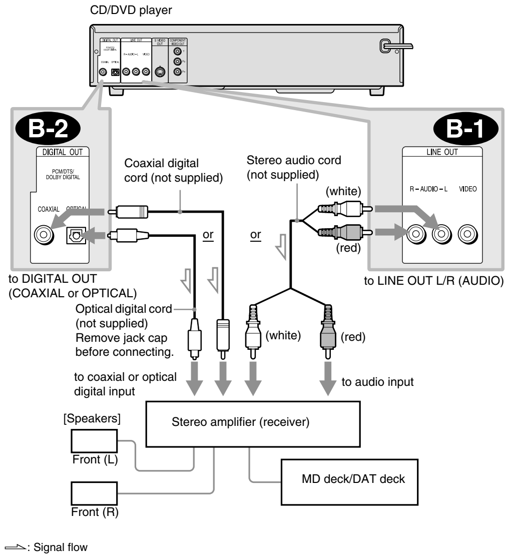
* The yellow plug is used for video signals (page 16).

Hint

When connecting to a monaural TV, use a stereo-mono conversion cord (not supplied). Connect the LINE OUT L/R (AUDIO) jacks to the TV’s audio input jack.

B Connecting to a stereo amplifier (receiver) and 2 speakers/Connecting to an MD deck or DAT deck

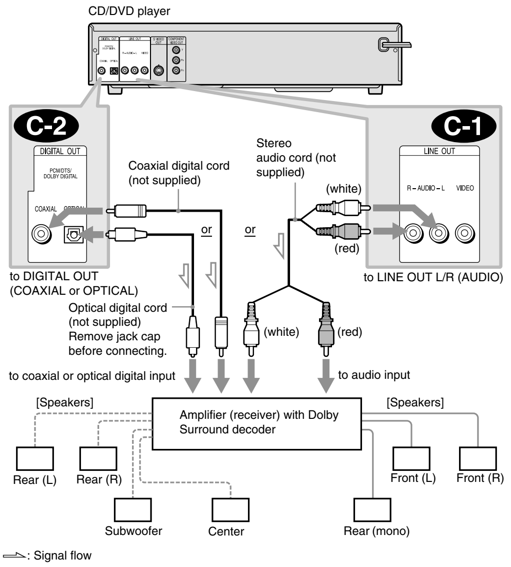
If the stereo amplifier (receiver) has audio input jacks L and R only, use B-1. If the amplifier (receiver) has a digital input jack, or when connecting to an MD deck or DAT deck, use B-2. In this case, you can also connect the player directly to the MD deck or DAT deck without using your stereo amplifier (receiver).


CD/DVD player
B-2
B-1
DIGITAL OUT
PCM/DTS/ DOLBY DIGITAL
COAXIAL
OPTICAL
Coaxial digital cord (not supplied)
Stereo audio cord (not supplied)
(white)
(red)
LINE OUT
R – AUDIO – L
VIDEO
or
or
to DIGITAL OUT (COAXIAL or OPTICAL)
to LINE OUT L/R (AUDIO)
Optical digital cord (not supplied) Remove jack cap before connecting.
(white)
(red)
to coaxial or optical digital input
to audio input
[Speakers]
Stereo amplifier (receiver)
Front (L)
MD deck/DAT deck
Front (R)
: Signal flow

→ continued

C Connecting to an AV amplifier (receiver) having a Dolby Surround (Pro Logic) decoder and 3 to 6 speakers

You can enjoy the Dolby Surround effects only when playing Dolby Surround audio or multi-channel audio (Dolby Digital) discs.
If your amplifier (receiver) has L and R audio input jacks only, use C-1. If your amplifier (receiver) has a digital input jack, use C-2.

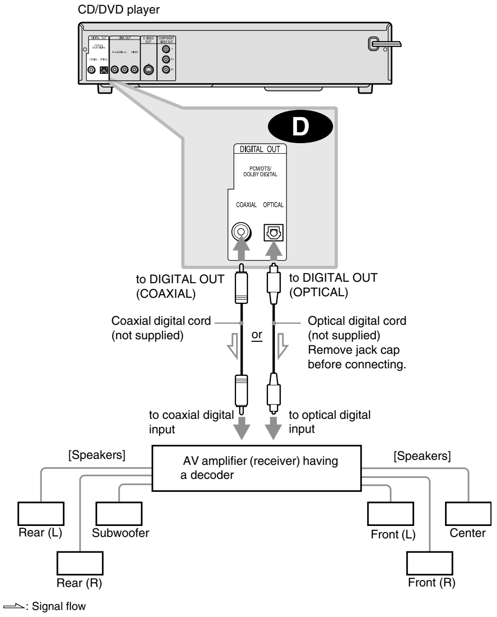

CD/DVD player
C-2
C-1
DIGITAL OUT
PCM/DTS/ DOLBY DIGITAL
COAXIAL
OPTICAL
Coaxial digital cord (not supplied)
Stereo audio cord (not supplied)
(white)
(red)
LINE OUT
R – AUDIO – L
VIDEO
or
or
to DIGITAL OUT (COAXIAL or OPTICAL)
to LINE OUT L/R (AUDIO)
Optical digital cord (not supplied) Remove jack cap before connecting.
(white)
(red)
to coaxial or optical digital input
to audio input
[Speakers]
Amplifier (receiver) with Dolby Surround decoder
[Speakers]
Rear (L)
Rear (R)
Front (L)
Front (R)
Subwoofer
Center
Rear (mono)
: Signal flow

Note

When connecting 6 speakers, replace the monaural rear speaker with a center speaker, 2 rear speakers and a subwoofer.

D Connecting to an AV amplifier (receiver) with a digital input jack having a Dolby Digital, or DTS decoder and 6 speakers

This connection will allow you to use the Dolby Digital, or DTS decoder function of your AV amplifier (receiver).



Note

After you have completed the connection, be sure to set "DOLBY DIGITAL" to "DOLBY DIGITAL" and "DTS" to "ON" in Quick Setup (page 24).

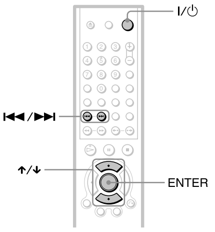
→ continued

Step 5: Connecting the Power Cord

Plug the player and TV power cords into an AC outlet.

Step 6: Quick Setup

Follow the steps below to make the minimum number of basic adjustments for using the player. To skip an adjustment, press ▶▶I. To return to the previous adjustment, press I◀◀.



1 Turn on the TV.

2 Press I/⏻.

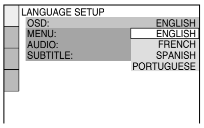
Press PROGRESSIVE on the front panel only if you have made video connection C (page 16) and wish to view progressive video signals. The PROGRESSIVE indicator lights up in blue when the player outputs progressive signal.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

"Press [ENTER] to run QUICK SETUP." appears at the bottom of the screen. If this message does not appear, select "QUICK" under "SETUP" in the Control Menu to run Quick Setup (page 64).

4 Press ENTER without inserting a disc.

The Setup Display for selecting the language used in the on-screen display appears.



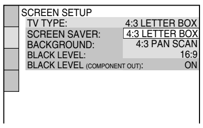
```
LANGUAGE SETUP
  OSD:                  ENGLISH
  MENU:                 ENGLISH
  AUDIO:                 FRENCH
  SUBTITLE:             SPANISH
                     PORTUGUESE
```

5 Press ↑/↓ to select a language.

The player uses the language selected here to display the menu and subtitles as well.

6 Press ENTER.

The Setup Display for selecting the aspect ratio of the TV to be connected appears.



```
SCREEN SETUP
  TV TYPE:                        4:3 LETTER BOX
  SCREEN SAVER:                   4:3 LETTER BOX
  BACKGROUND:                       4:3 PAN SCAN
  BLACK LEVEL:                              16:9
  BLACK LEVEL (COMPONENT OUT):                ON
```

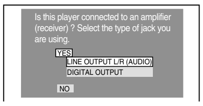
7 Press ↑/↓ to select the setting that matches your TV type.

◆ If you have a 4:3 standard TV
- 4:3 LETTER BOX or 4:3 PAN SCAN (page 65)

◆ If you have a wide-screen TV or a 4:3 standard TV with a wide-screen mode
- 16:9 (page 65)

8 Press ENTER.

The Setup Display for selecting the type of jack used to connect your amplifier (receiver) appears.



Is this player connected to an amplifier (receiver) ? Select the type of jack you are using.

YES
LINE OUTPUT L/R (AUDIO)
DIGITAL OUTPUT
NO

9 Press ↑/↓ to select the type of jack (if any) you are using to connect to an amplifier (receiver), then press ENTER.

Choose the item that matches the audio connection you selected on pages 20 to 23 (A through D).

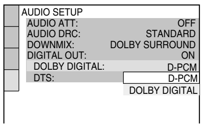
A
- If you connect just a TV and nothing else, select "NO." Quick Setup is finished and connections are complete.

B-1 C-1
- Select "LINE OUTPUT L/R (AUDIO)." Quick Setup is finished and connections are complete.

B-2 C-2 D
- Select "DIGITAL OUTPUT." The Setup Display for "DOLBY DIGITAL" appears.

10 Press ↑/↓ to select the type of Dolby Digital signal you wish to send to your amplifier (receiver).

Choose the signal that matches the audio connection you selected on pages 21 to 23 (B through D).



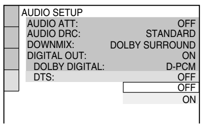
AUDIO SETUP
AUDIO ATT: OFF
AUDIO DRC: STANDARD
DOWNMIX: DOLBY SURROUND
DIGITAL OUT: ON
DOLBY DIGITAL: D-PCM
DTS: D-PCM
DOLBY DIGITAL

B-2 C-2
- D-PCM (page 68)

D
- DOLBY DIGITAL (only if the amplifier (receiver) has a Dolby Digital decoder) (page 68)

11 Press ENTER.

"DTS" is selected.



AUDIO SETUP
AUDIO ATT: OFF
AUDIO DRC: STANDARD
DOWNMIX: DOLBY SURROUND
DIGITAL OUT: ON
DOLBY DIGITAL: D-PCM
DTS: OFF
OFF
ON

12 Press ↑/↓ to select whether or not you wish to send a DTS signal to your amplifier (receiver).

Choose the item that matches the audio connection you selected on pages 21 to 23 (B through D).

B-2 C-2
- OFF (page 68)

D
- ON (only if the amplifier (receiver) has a DTS decoder) (page 68)

13 Press ENTER.

Quick Setup is finished. All connections and setup operations are complete.

→ continued

Enjoying the surround sound effects

To enjoy the surround sound effects of this player or your amplifier (receiver), set the following items as described below for the audio connection you selected on pages 21 to 23 (B through D). Each of these is the default setting and does not need to be adjusted when you first connect the player. Refer to page 63 for using the Setup Display.

Audio Connection (pages 20 to 23)

A
- No additional settings are needed.

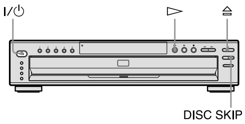
B-1 C-1
- Set "DOWNMIX" to "DOLBY SURROUND" (page 68).
- If the sound distorts even when the volume is turned down, set "AUDIO ATT" to "ON" (page 67).

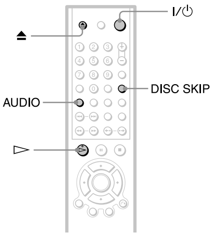
B-2 C-2 D
- Set "DOWNMIX" to "DOLBY SURROUND" (page 68).
- Set "DIGITAL OUT" to "ON" (page 68).

Playing Discs DVD-V

DVD-RW VCD CD DATA CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted. Refer to the operating instructions supplied with your disc.





1 Turn on your TV.

2 Press I/⏻.

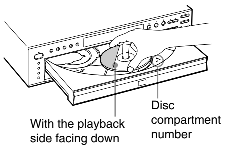
The player turns on.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

◆ When using an amplifier (receiver)
Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the player.

4 Press ≜ on the player, and place a disc on the disc tray.

To place other discs on the tray, press DISC SKIP and place the discs in the order you want to play them.
Each time you press DISC SKIP, the disc tray turns so you can place the discs on the empty compartments. The player plays from the last disc placed on the tray.



5 Press ▷.

The disc tray closes, and the player starts playback (continuous play). Adjust the volume on the TV or the amplifier (receiver).
Depending on the disc, a menu may appear on the TV screen. For DVD VIDEOs, see page 31. For VIDEO CDs, see page 32.

To turn off the player

Press I/⏻. The player enters standby mode.

Hint

You can have the player turn off automatically whenever you leave it in stop mode for more than 30 minutes. To turn on this function, set "AUTO POWER OFF" in "CUSTOM SETUP" to "ON" (page 66).

Notes on playing DTS sound tracks on a CD

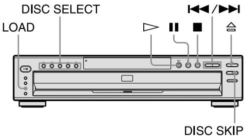
- When playing DTS-encoded CDs, excessive noise will be heard from the analog stereo jacks. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo jacks of the player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel decoder system must be connected to the digital jack of the player.
- Set the sound to "STEREO" using the AUDIO button when you play DTS sound tracks on a CD (page 49).
- Do not play DTS sound tracks without first connecting the player to an audio component having a built-in DTS decoder.
- The player outputs the DTS signal via the DIGITAL OUT (COAXIAL or OPTICAL) jack even if "DTS" in "AUDIO SETUP" is set to "OFF" in the Setup Display (page 68), and may affect your ears or cause your speakers to be damaged.

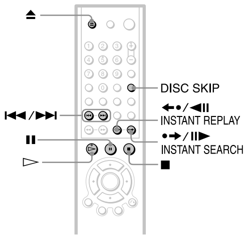
→ continued

Notes on playing DTS sound tracks on a DVD

- DTS audio signals are output only through the DIGITAL OUT (COAXIAL or OPTICAL) jack.
- When you play a DVD VIDEO with DTS sound tracks, set "DTS" to "ON" in "AUDIO SETUP" (page 68).
- If you connect the player to audio equipment without a DTS decoder, do not set "DTS" to "ON" in "AUDIO SETUP" (page 68). A loud noise may come out from the speakers, affecting your ears or causing the speakers to be damaged.

Additional operations





To	Operation
Select a disc	Press DISC SELECT 1–5 on the player
Stop	Press ■
Pause	Press II
Resume play after pause	Press II or ▷
Go to the next disc	Press DISC SKIP
Go to the next chapter, track, or scene in continuous play mode	Press ▶▶I
Go back to the previous chapter, track, or scene in continuous play mode	Press I◀◀
Stop play and remove the disc	Press ≜
Replay the previous scene*	Press ←•/◀II INSTANT REPLAY during playback
Briefly fast forward the current scene**	Press •→/II▶ INSTANT SEARCH during playback
Check if a disc is in the disc compartment	Press LOAD on the player. The disc number indicators on the front panel display (1–5) light up.

* For DVD VIDEOs and DVD-RWs/DVD-Rs only.
**For DVD VIDEOs and DVD-RWs/DVD-Rs or DVD+RWs only.

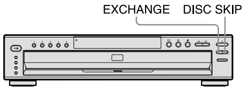
Hints
- The Instant Replay function is useful when you want to review a scene or dialog that you missed.
- The Instant Search function is useful when you want to pass over a scene that you don't want to watch.
- Before loading the discs, a disc number indicator of an empty compartment may be lit.

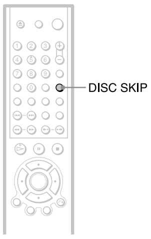
Note

You may not be able to use the Replay function with some scenes.

Replacing discs while playing a disc (EXCHANGE)

You can open the disc tray while playing a disc so that you can check which discs are to be played next and replace discs without interrupting playback of the current disc.





1 Press EXCHANGE.
The disc tray opens and two disc compartments appear. Even if the player is playing a disc, it doesn't stop playing.

2 Replace the discs in the compartments with new ones.

3 Press DISC SKIP.
The disc tray turns and another two disc compartments appear.

4 Replace the discs in the compartments with new ones.

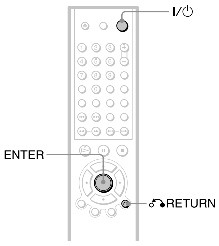
5 Press EXCHANGE.
The disc tray closes.

Hint
While the disc tray is open,
– If the playback of the current disc end, the player stops playing. If the disc is played in One Disc Repeat Play mode (page 39), the current disc starts playing again.
– In All Discs Shuffle Play mode (page 38), titles/tracks/chapters are reshuffled only on the current disc.
– In Program Play mode (page 36), the titles/tracks/chapters only on the current disc are played.

Note
Do not push the disc tray to close in Step 5, as you may damage the player.

Locking the disc tray (Child Lock)

You can lock the disc tray to prevent children from opening it.



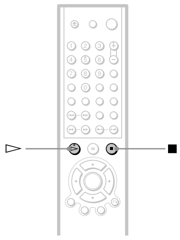
When the player is in standby mode, press ↶ RETURN, ENTER, and then I/⏻ on the remote.
The player turns on and "LOCKED" appears on the front panel display.
The ⏏ and EXCHANGE buttons on the player and the ⏏ button on the remote do not work while the Child Lock is set.

To unlock the disc tray
When the player is in standby mode, press ↶ RETURN, ENTER, and then I/⏻ again.

Note
Even if you select "RESET" under "SETUP" in the Control Menu (page 64), the disc tray remains locked.

Resuming Playback from the Point Where You Stopped the Disc (Resume Play/Multi-disc Resume)

The player remembers the point where you stopped the disc.



Resuming playback for the current disc (Resume Play) DVD-V DVD-RW VCD CD DATA CD

The player remembers the point where you stopped the disc even if the player enters standby mode by pressing I/⏻.

1 While playing a disc, press ■ to stop playback.
"RESUME" appears on the front panel display.

2 Press ▷.
The player starts playback from the point where you stopped the disc in step 1.

Hint
To play from the beginning of the disc, press ■ twice, then press ▷.

Notes
- The point where you stopped playing is cleared when:
  – you change the play mode.
  – you do Program Play or Shuffle Play.
  – you change the settings on the Setup Display.
- When playing a CD and DVD-RW (VR mode), the point where you stopped is cleared when:
  – you press DISC SKIP or DISC SELECT.
  – you opened the disc tray.
  – you disconnect the power cord.
- When playing a DATA CD, the point where you stopped playing is cleared when the player enters standby mode, the disc tray is opened, or the power cord is disconnected.
- This function may not work with some discs.

Storing the point where you stopped the disc (Multi-disc Resume) DVD-V VCD

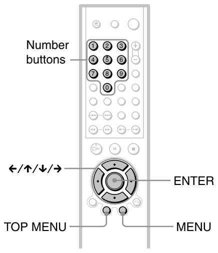
The player stores the point where you stopped the disc and resumes playback from the same point the next time you insert the same disc. The player remembers the stopped point of the disc even after you play other discs in the disc tray.
Resume playback points for up to 6 different DVD VIDEO/VIDEO CD discs remain in memory even if you disconnect the power cord. When you store a resume playback point for the 7th disc, the resume playback point for the first disc is deleted.

Hints
- To play from the beginning of the disc, press ■ twice, then press ▷.
- To turn off the Multi-disc Resume function, set "MULTI-DISC RESUME" in "CUSTOM SETUP" to "OFF" (page 67). Playback restarts at the resume point only for the current disc in the player.

Notes
- "MULTI-DISC RESUME" in "CUSTOM SETUP" must be set to "ON" (default) for this function to work (page 67).
- This function may not work with some discs.
- If "MULTI-DISC RESUME" in "CUSTOM SETUP" is set to "ON" and you playback a recorded disc such as DVD-RW, the player may playback other recorded discs from the same resume point. To play from the beginning, press ■ twice and then press ▷.

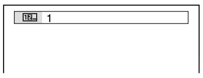
Using the DVD's Menu DVD-V

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the TOP MENU button.
When you play DVDs that allow you to select items such as the language for the subtitles and the language for the sound, select these items using the MENU button.



1 Press TOP MENU or MENU.
The disc's menu appears on the TV screen. The contents of the menu vary from disc to disc.

2 Press ←/↑/↓/→ or the number buttons to select the item you want to play or change.
If you press the number buttons, the following display appears.
Press the number buttons to select the item you want.

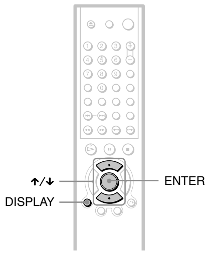


1

3 Press ENTER.

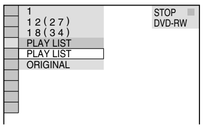
Selecting "ORIGINAL" or "PLAY LIST" on a DVD-RW Disc DVD-RW

Some DVD-RW discs in VR (Video Recording) mode have two types of titles for playback: originally recorded titles (ORIGINAL) and titles that can be created on recordable DVD players for editing (PLAY LIST). You can select the type of titles to be played.



1 Press DISPLAY in stop mode.
The Control Menu appears.

2 Press ↑/↓ to select (ORIGINAL/PLAY LIST), then press ENTER.
The options for "ORIGINAL/PLAY LIST" appear.



1
1 2 (2 7)
1 8 (3 4)
PLAY LIST
PLAY LIST
ORIGINAL

STOP
DVD-RW

→ continued

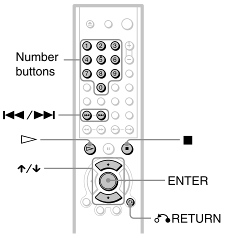
3 Press ↑/↓ to select the setting.
- PLAY LIST: plays the titles created from "ORIGINAL" for editing.
- ORIGINAL: plays the titles originally recorded.

4 Press ENTER.

To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

Playing VIDEO CDs with PBC Functions (PBC Playback) VCD

PBC (Playback Control) allows you to play VIDEO CDs interactively by following the menu on the TV screen.



1 Start playing a VIDEO CD with PBC functions.
The menu for your selection appears.

2 Select the item number and track you want using ↑/↓ or the number buttons.

3 Press ENTER.

4 Follow the instructions in the menu for interactive operations.
Refer to the instructions supplied with the disc, as the operating procedure may differ depending on the VIDEO CD.

To return to the menu
Press ↶ RETURN.

Hint

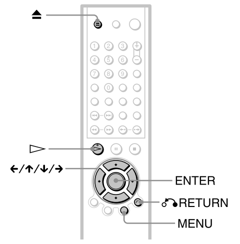
To play without using PBC, press ⏮/⏭ while the player is stopped to select a track, then press ▷ or ENTER.
"Play without PBC." appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu.
To return to PBC playback, press ■ twice then press ▷.

Notes

- Depending on the VIDEO CD, "Press ENTER" in step 3 may appear as "Press SELECT" in the instructions supplied with the disc. In this case, press ▷.
- The PBC functions of Super VCDs do not work with this player. Super VCDs are played in continous play mode only.

Playing an MP3 Audio Track DATA CD

You can play back DATA CDs (CD-ROMs/ CD-Rs/CD-RWs) recorded in MP3 (MPEG1 Audio Layer 3) format.



1 **Press ≜ and place a DATA CD on the disc tray.**

2 **Press ▷.**

The disc tray closes, and the player starts to play the first MP3 audio track in the first album on the disc.

Notes

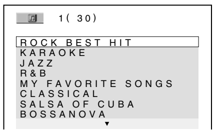
- This player can play MP3 audio tracks recorded in the following sampling frequencies: 32 kHz, 44.1 kHz, 48 kHz.
- The playback order may be different from the edited order. See "The playback order of MP3 audio tracks" (page 35) for details.

→ continued

Selecting an album and track

1 **Press MENU.**

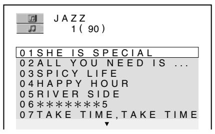
The list of MP3 albums recorded on the DATA CD appears.



1(30)
ROCK BEST HIT
KARAOKE
JAZZ
R&B
MY FAVORITE SONGS
CLASSICAL
SALSA OF CUBA
BOSSANOVA
▼

2 **Select an album using ↑/↓ and press ENTER.**

The list of tracks contained in the album appears.



JAZZ
1(90)
01SHE IS SPECIAL
02ALL YOU NEED IS ...
03SPICY LIFE
04HAPPY HOUR
05RIVER SIDE
06∗∗∗∗∗∗∗5
07TAKE TIME,TAKE TIME
▼

3 **Select a track using ↑/↓ and press ENTER.**

The selected track starts playing.
When a track or album is being played, its title is shaded.

To go to the next or previous page
Press → or ←.

To return to the previous display
Press RETURN.

To turn off the display
Press MENU.

Notes

- Only the letters in the alphabet and numbers can be used for album or track names. Anything else is displayed as "*".
- ID3 tags cannot be displayed.

About MP3 audio tracks

You can play MP3 audio tracks on CD-ROMs or CD-Rs/CD-RWs. However, the discs must be recorded according to ISO9660 level 1, level 2, or Joliet format for the player to recognize the tracks.
You can also play discs recorded in Multi Session.
See the instructions of the CD-R/CD-RW device or recording software (not supplied) for details on the recording format.

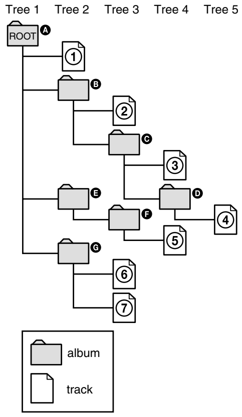
To play a Multi Session CD
This player can play Multi Session CDs when an MP3 audio track is located in the first session. Any subsequent MP3 audio tracks, recorded in the later sessions, can also be played back.
When audio tracks and images in music CD format or Video CD format are recorded in the first session, only the first session will be played back.

Notes

- If you put the extension ".MP3" to data not in MP3 format, the player cannot recognize the data properly and will generate a loud noise which could damage your speaker system.
- The player cannot play audio tracks in MP3PRO format.

The playback order of MP3 audio tracks
The playback order of albums and tracks recorded on a DATA CD is as follows.

◆Structure of disc contents



When you insert a DATA CD and press ▷, the numbered tracks are played sequentially, from ① through ⑦. Any sub-albums/tracks contained within a currently selected album take priority over the next album in the same tree. (Example: Ⓒ contains Ⓓ so ④ is played before ⑤.)
When you press MENU and the list of MP3 albums appears (page 34), the albums are arranged in the following order: Ⓐ → Ⓑ → Ⓒ → Ⓓ → Ⓕ → Ⓖ. Albums that do not contain tracks (such as album Ⓔ) do not appear in the list.

Hints

- If you add numbers (01, 02, 03, etc.) to the front of the track names, the tracks will be played in that order.
- Since a disc with many trees takes longer to start playback, it is recommended that you create the albums no more than two trees.

Notes

- Depending on the software you use to create the DATA CD, the playback order may differ from the illustration above.
- The playback order above may not be applicable if there are more than a total of 999 albums and tracks in the DATA CD.
- The player can recognize up to 499 albums (the player will count just albums, including albums that do not contain MP3 audio tracks). The player will not play any albums beyond the first 499 albums. Of the first 499 albums, the player will play no more than a combined total of 999 albums and tracks.

Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play)

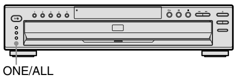
You can set the following play modes:
- Program Play (page 36)
- Shuffle Play (page 38)
- Repeat Play (page 39)
- A-B Repeat Play (page 40)

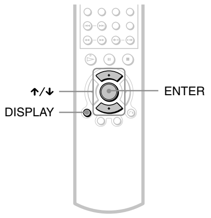
Note

The play mode is canceled when:
– you open the disc tray.
– the player enters standby mode by pressing I/⏻.

Selecting the disc mode (One Disc or All Discs) DVD-V DVD-RW VCD CD DATA CD

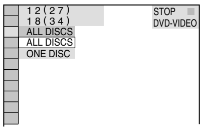
You can play one disc or all of the discs in the player. Before setting Program Play, Shuffle Play, or Repeat Play, you must select whether to set those play mode on one disc or all of the discs.





1 **Press DISPLAY once or twice.**
The following Control Menu appears.

2 **Press ↑/↓ to select (One Disc/ All Discs) and press ENTER.**



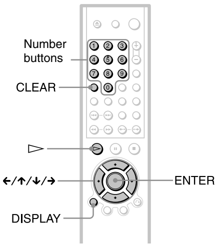
12(27)
18(34)
ALL DISCS
ALL DISCS
ONE DISC
STOP
DVD-VIDEO

Hint

You can select "ALL DISCS" or "ONE DISC" by pressing ONE/ALL button on the player. Each time you press the button, the disc mode changes alternately.

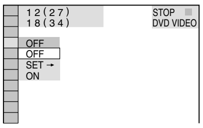
Creating your own program (Program Play) DVD-V VCD CD

You can play the contents of a disc in the order you want by arranging the order of the titles, chapters, or tracks on the disc to create your own program.
You can program up to 99 items. By selecting All Discs mode (page 36), you can create a program for all of the discs in the player.



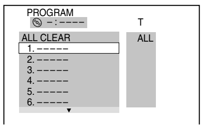
1 **Press DISPLAY twice.**
The Control Menu appears.

2 **Press ↑/↓ to select (PROGRAM), then press ENTER.**
The options for "PROGRAM" appear.



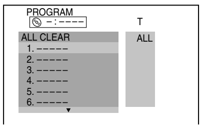
1 2 (2 7)
1 8 (3 4)
STOP
DVD VIDEO
OFF
OFF
SET →
ON

3 **Press ↑/↓ to select “SET →” then press ENTER.**
The display for programming appears.



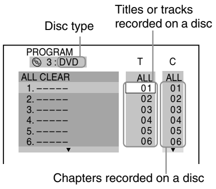
PROGRAM
– : – – – –
T
ALL CLEAR
ALL
1. – – – – –
2. – – – – –
3. – – – – –
4. – – – – –
5. – – – – –
6. – – – – –

4 **Press →.**
The player is ready to program the first disc.



PROGRAM
– : – – – –
T
ALL CLEAR
ALL
1. – – – – –
2. – – – – –
3. – – – – –
4. – – – – –
5. – – – – –
6. – – – – –

5 **Select the disc you want to program using the number buttons or ↑/↓, then press ENTER.**
The cursor moves to the title or track row “T” (in this case, “01”).



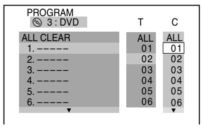
PROGRAM
3 : DVD
T
C
ALL CLEAR
ALL
ALL
1. – – – – –
01
01
2. – – – – –
02
02
3. – – – – –
03
03
4. – – – – –
04
04
5. – – – – –
05
05
6. – – – – –
06
06

Disc type
Titles or tracks recorded on a disc
Chapters recorded on a disc

“?” appears when the player has not played the disc.

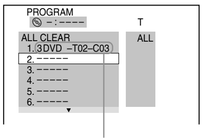
6 **Select the title, chapter, or track you want to program.**

◆ When playing a DVD VIDEO
For example, select chapter “03” of title “02.”
Press ↑/↓ or the number buttons to select “02” under “T,” then press ENTER.



PROGRAM
3 : DVD
T
C
ALL CLEAR
ALL
ALL
1. – – – – –
01
01
2. – – – – –
02
02
3. – – – – –
03
03
4. – – – – –
04
04
5. – – – – –
05
05
6. – – – – –
06
06

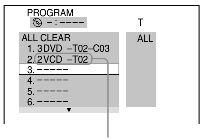
Next, press ↑/↓ or the number buttons to select “03” under “C,” then press ENTER.



PROGRAM
– : – – – –
T
ALL CLEAR
ALL
1. 3DVD –T02–C03
2. – – – – –
3. – – – – –
4. – – – – –
5. – – – – –
6. – – – – –

Selected disc, title and chapter

◆ When playing a VIDEO CD or CD
For example, select track “02.”
Press ↑/↓ or the number buttons to select “02” under “T,” then press ENTER.



PROGRAM
– : – – – –
T
ALL CLEAR
ALL
1. 3DVD –T02–C03
2. 2VCD –T02
3. – – – – –
4. – – – – –
5. – – – – –
6. – – – – –

Selected disc and track

7 **To program other discs, titles, chapters, or tracks, repeat steps 4 to 6.**
The programmed discs, titles, chapters, and tracks are displayed in the selected order.

→ *continued*

8 **Press ▷ to start Program Play.**
Program Play begins.
When the program ends, you can restart the same program again by pressing ▷.

To stop Program Play

Press CLEAR or select “OFF” in Step 3.

To turn off the display

Press DISPLAY repeatedly until the display is turned off.

To cancel or change a program

1. Follow steps 1 and 2 of “Creating your own program (Program Play).”
2. Select the program number of the disc, title, chapter, or track you want to cancel or change using ↑/↓ or the number buttons, and press →.
3. To cancel the program, press ← then CLEAR.
   To change the program, follow step 4 for new programming.

To cancel all the discs, titles, chapters, or tracks in the program

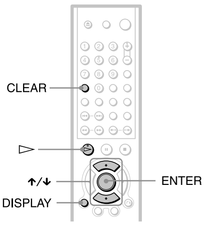
1. Follow steps 1 and 2 of “Creating your own program (Program Play).”
2. Press ↑ and select “ALL CLEAR.”
3. Press ENTER.

Hint
You can do Repeat Play or Shuffle Play of the programmed titles, chapters, or tracks. During Program Play, follow the steps of “Repeat Play” (page 39) or “Shuffle Play” (page 38).

Notes
- You cannot use this function with VIDEO CDs with PBC playback.
- When playing Super VCDs, the total time of the programmed tracks does not appear on the screen.

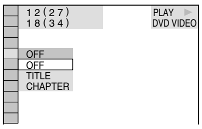
Playing in random order (Shuffle Play) DVD-V DVD-RW VCD CD DATA CD

You can have the player “shuffle” titles, chapters, or tracks. Subsequent “shuffling” may produce a different playing order. By selecting All Discs mode (page 36), you can shuffle all of the discs in the player.



1 **Press DISPLAY twice during playback (when playing a DATA CD, press once).**
The Control Menu appears.

2 **Press ↑/↓ to select (SHUFFLE), then press ENTER.**
The options for “SHUFFLE” appear.



1 2 (2 7)
1 8 (3 4)
PLAY ▶
DVD VIDEO
OFF
OFF
TITLE
CHAPTER

3 **Press ↑/↓ to select the item to be shuffled.**

◆ When playing a DVD VIDEO
- DISC*
- TITLE
- CHAPTER

◆ When playing a VIDEO CD or CD
- DISC*
- TRACK

◆ When playing a DVD-RW or DATA CD
- DISC*

◆ When Program Play is activated
- ON: shuffles titles, chapters, or tracks selected in Program Play.

4 **Press ENTER.**
Shuffle Play starts.

---

* You can select “DISC” in All Discs mode only.

To return to normal play

Press CLEAR, or select “OFF” in step 2.

To turn off the control menu

Press DISPLAY repeatedly until the Control Menu is turned off.

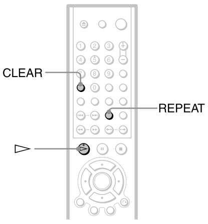
Hints
- You can set Shuffle Play while the player is stopped. After selecting the “SHUFFLE” option, press ▷. Shuffle Play starts.
- Up to 96 chapters in a disc can be played in random order when “CHAPTER” is selected.

Note
You cannot use this function with VIDEO CDs with PBC playback.

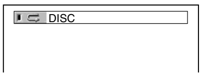
Playing repeatedly (Repeat Play)

DVD-V DVD-RW VCD CD DATA CD

You can play all of the titles, albums or tracks on a disc or a single title, chapter, album, or track repeatedly.
You can use a combination of Shuffle or Program Play modes. By selecting All Discs mode (page 36), you can repeat all of the discs in the player.



1 **Press REPEAT during playback.**
The following display appears.



DISC

2 **Press REPEAT repeatedly to select the item to be repeated.**

◆ When playing a DVD VIDEO
- DISC: repeats all of the titles on the current disc in One Disc mode, or all of the discs in All Discs mode.
- TITLE: repeats the current title on a disc.
- CHAPTER: repeats the current chapter.

◆ When playing a DVD-RW
- DISC: repeats all of the titles on the selected type in One Disc mode, or all of the discs in All Discs mode.
- TITLE: repeats the current title on a disc.
- CHAPTER: repeats the current chapter.

◆ When playing a VIDEO CD or CD
- DISC: repeats all of the tracks on the current disc in One Disc mode, or all of the discs in All Discs mode.
- TRACK: repeats the current track.

◆ When playing a DATA CD (MP3 audio)
- DISC: repeats all of the albums on the current disc in One Disc mode, or all of the discs in All Discs mode.
- ALBUM: repeats the current album.
- TRACK: repeats the current track.

◆ When Program Play or Shuffle Play is activated
- ON: repeats Program Play or Shuffle Play.

To return to normal play

Press CLEAR, or select “OFF” in step 2.

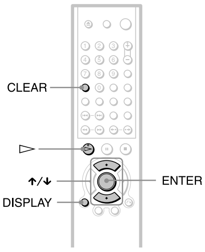
Hints
- You can set Repeat Play while the player is stopped. After selecting the “REPEAT” option, press ▷. Repeat Play starts.
- You can also select “REPEAT” from the Control Menu (page 12).

Note
You cannot use this function with VIDEO CDs with PBC playback.

→ *continued*

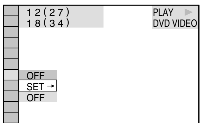
Repeating a specific portion (A-B Repeat Play) DVD-V DVD-RW VCD CD

You can play a specific portion of a title, chapter or track repeatedly. (This function is useful when you want to memorize lyrics, etc.)



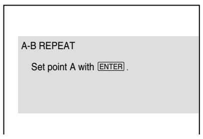
1 **Press DISPLAY twice during playback.**
The Control Menu appears.

2 **Press ↑/↓ to select (A-B REPEAT), then press ENTER.**
The options for “A-B REPEAT” appear.



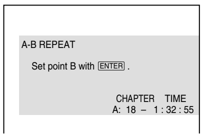
1 2 (2 7)
1 8 (3 4)
PLAY ▶
DVD VIDEO
OFF
SET →
OFF

3 **Press ↑/↓ to select “SET →,” then press ENTER.**
The “A-B REPEAT” setting display appears.



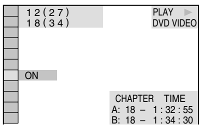
A-B REPEAT
Set point A with ENTER .

4 **During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.**
The starting point (point A) is set.



A-B REPEAT
Set point B with ENTER .
CHAPTER TIME
A: 18 – 1 : 32 : 55

5 **When you reach the ending point (point B), press ENTER again.**
The set points are displayed and the player starts repeating this specific portion.



1 2 (2 7)
1 8 (3 4)
PLAY ▶
DVD VIDEO
ON
CHAPTER TIME
A: 18 – 1 : 32 : 55
B: 18 – 1 : 34 : 30

To return to normal play

Press CLEAR.

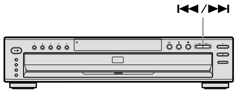
To turn off the Control Menu

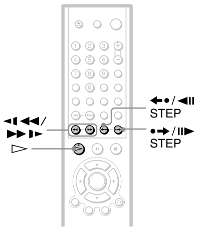
Press DISPLAY repeatedly until the Control Menu is turned off.

Notes
- When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Program Play are canceled.
- A-B Repeat Play does not work for titles containing still pictures on a DVD-RW in VR mode.
- A-B Repeat Play does not work across multiple titles (“ORIGINAL” or “PLAY LIST”) on a DVD-RW in VR mode.

Searching for a Particular Point on a Disc (Scan, Slow-motion Play, Search, Freeze Frame)

You can quickly locate a particular point on a disc by monitoring the picture or playing back slowly.





Note

Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

Locating a point quickly by playing a disc in fast forward or fast reverse (Scan) DVD-V DVD-RW VCD CD DATA CD

Press ◄▌◄◄ or ►►▌► while playing a disc. When you find the point you want, press ▷ to return to normal speed. Each time you press ◄▌◄◄ or ►►▌► during scan, the playback speed changes. With each press the indication changes as shown below. Actual speeds may differ with some discs.

Playback direction

×2► → FF1►► → FF2►► → FF3►►

FF3►► (DVD VIDEO/DVD-RW/VIDEO CD only)
×2► (DVD VIDEO/CD only)

Opposite direction

×2◄ → FR1◄◄ → FR2◄◄ → FR3◄◄

FR3◄◄ (DVD VIDEO/DVD-RW/VIDEO CD only)
×2◄ (DVD VIDEO only)

The "×2►"/"×2◄" playback speed is about twice the normal speed. The "FF3►►"/"FR3◄◄" playback speed is faster than the "FF2►►"/"FR2◄◄" and the "FF2►►"/"FR2◄◄" playback speed is faster than FF1►►"/FR1◄◄."

Watching frame by frame (Slow-motion play) DVD-V DVD-RW VCD

Press ◄▌◄◄ or ►►▌► when the player is in pause mode. To return to the normal speed, press ▷.
Each time you press ◄▌◄◄ or ►►▌► during Slow-motion play, the playback speed changes. Two speeds are available. With each press the indication changes as follows:

Playback direction
SLOW2 ▌► ↔ SLOW1 ▌►

Opposite direction (DVD only)
SLOW2 ◄▌ ↔ SLOW1 ◄▌

The "SLOW2 ▌►"/"SLOW2 ◄▌" playback speed is slower than "SLOW1 ▌►"/"SLOW1 ◄▌."

To locate a point quickly using the PREV (previous) / Next (next) button (Search)

DVD-V DVD-RW VCD CD DATA CD

You can search for a particular point on a disc using ⏮ / ⏭ on the player.
During playback, press and hold ⏭ on the player to locate a point in the playback direction, or press and hold ⏮ to locate a point in the opposite direction. When you find the point you want, release the button to return to normal playback speed.

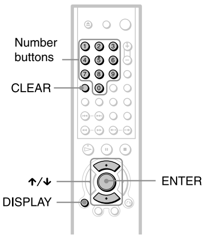
→ continued

Playing one frame at a time (Freeze Frame) DVD-V DVD-RW VCD

When the player is in the pause mode, press •→/II► to go to the next frame. Press ←•/◄II to go to the preceding frame (DVD only). If you hold the button down, you can view the frames in succession. To return to normal playback, press ▷.

Searching for a Title/Chapter/Track/Scene, etc. DVD-V DVD-RW VCD CD DATA CD

You can search a DVD by title or chapter, and you can search a VIDEO CD/CD by track, index, or scene. As titles and DATA CD tracks are assigned unique numbers on the disc, you can select the desired one by entering its number. Or, you can search for a scene using the time code.



1 **Press DISPLAY.**

The Control Menu appears.

2 **Press ↑/↓ to select the search method.**

◆ **When playing a DVD VIDEO/DVD-RW**

DISC
TITLE
CHAPTER
TIME/TEXT

Select "TIME/TEXT" to search for a starting point by inputting the time code.

◆ **When playing a VIDEO CD without PBC Playback**

DISC
TRACK
INDEX

◆ **When playing a VIDEO CD with PBC Playback**

DISC
SCENE
INDEX

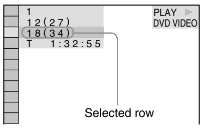
◆ **When playing a CD**

DISC
TRACK
INDEX

◆ **When playing a DATA CD (MP3 audio)**

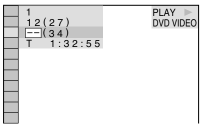
DISC
ALBUM
TRACK

Example: when you select CHAPTER
"** (**)" is selected (** refers to a number).
The number in parentheses indicates the total number of titles, chapters, tracks, indexes or scenes.



3 **Press ENTER.**

"** (**)" changes to "-- (**)."



4 **Press ↑/↓ or the number buttons to select the title, chapter, track, index, or scene number you want to search.**

If you make a mistake
Cancel the number by pressing CLEAR, then select another number.

If you make a mistake
Cancel the number by pressing CLEAR, then select another number.

5 **Press ENTER.**

The player starts playback from the selected number.

To search for a scene using the time code (DVD VIDEO/DVD-RW only)

1 In Step 2, select TIME/TEXT.
"T **:**:**" (playing time of the current title) is selected.

2 Press ENTER.
"T **:**:**" changes to "T --:--:--."

3 Input the time code using the number buttons, then press ENTER.
For example, to find the scene at 2 hours, 10 minutes, and 20 seconds after the beginning, just enter "2:10:20."

Hints

- When the display is turned off you can search for a chapter (DVD VIDEO/DVD-RW) or track (CD) by pressing the number buttons and ENTER.
- You can display the first scene of titles, chapters or tracks recorded on the disc on a screen divided into 9 sections. You can start playback directly by selecting one of the scenes. For details, see "Searching by Scene (PICTURE NAVIGATION)" (page 44).

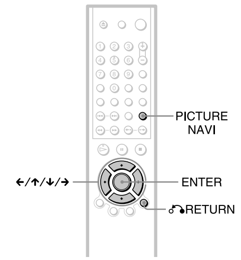
Notes

- You cannot search for a scene on a DVD+RW using the time code.
- The title, chapter or track number displayed is the same number recorded on the disc.
- You cannot search for a still picture on a DVD-RW in VR mode.

Searching by Scene

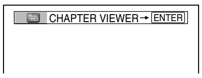
(PICTURE NAVIGATION) DVD-V VCD

You can divide the screen into 9 subscreens and find the desired scene quickly.



1 **Press PICTURE NAVI during playback.**

The following display appears.



2 **Press PICTURE NAVI repeatedly to select the item.**

- Refer to the explanations given for each item in the following sections.
- CHAPTER VIEWER (for DVD VIDEO only)
- TITLE VIEWER (for DVD VIDEO only)
- TRACK VIEWER (for VIDEO CD only)

3 **Press ENTER.**

To return to normal play
Press RETURN.

Hint
You can also select "PICTURE NAVIGATION" from the Control Menu (page 12).

Notes

- The "PICTURE NAVIGATION" is not available when playing Super VCDs.
- Depending on the disc, you may not be able to select all functions.
- The sound is muted when using this function.

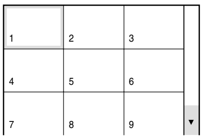
Scanning the title, chapter, or track (TITLE VIEWER, CHAPTER VIEWER, TRACK VIEWER)

DVD-V VCD

You can divide the screen into 9 subscreens and display the first scene of titles, chapters, or tracks.

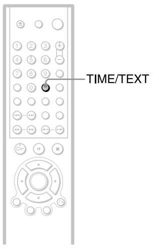
You can also play back from the selected title, chapter, or track. After performing step 3 of "Searching by Scene (PICTURE NAVIGATION)" above, select the scene using ←/↑/↓/→ and press ENTER.

Hint
If there are more than 9 titles, chapters, or tracks, ▼ is displayed at the bottom right.
To display the additional titles, chapters, or tracks, select the bottom right scene (the position 9) and press ↓. To return to the previous scene, select the top left scene (the position 1) and press ↑.



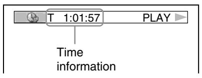
Checking the Playing Time and Remaining Time DVD-V DVD-RW VCD CD DATA CD

You can check the playing time and remaining time of the current title, chapter, or track. Also, you can check the DVD/CD text or track name (MP3 audio) recorded on the disc.



1 Press TIME/TEXT during playback.

The following display appears.



2 Press TIME/TEXT repeatedly to change the time information.

The display and the kinds of time that you can change depend on the disc you are playing.

◆ **When playing a DVD VIDEO or DVD-RW**

- T ∗:∗:∗
  Playing time of the current title
- T– ∗:∗:∗
  Remaining time of the current title
- C ∗:∗:∗
  Playing time of the current chapter
- C– ∗:∗:∗
  Remaining time of the current chapter

◆ **When playing a VIDEO CD (with PBC functions)**

- ∗:∗ (minutes : seconds)
  Playing time of the current scene

◆ **When playing a VIDEO CD (without PBC functions) or CD**

- T ∗:∗ (minutes : seconds)
  Playing time of the current track
- T–∗:∗
  Remaining time of the current track
- D ∗:∗
  Playing time of the current disc
- D–∗:∗
  Remaining time of the current disc

◆ **When playing a DATA CD (MP3 audio)**

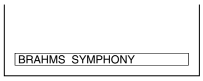
- ∗:∗ (minutes : seconds)
  Playing time of the current track

◆ **When playing a Super VCD**

- T ∗:∗ (minutes : seconds)
  Playing time of the current track

To check the DVD/CD text or track and album names (MP3 audio)

Press TIME/TEXT repeatedly in step 2 to display text recorded on the DVD VIDEO/CD/DATA CD.
The DVD/CD text appears only when text is recorded in the disc. You cannot change the text. If the disc does not contain text, "NO TEXT" appears.



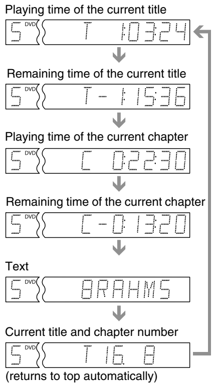
For DATA CDs, the track and album names of the MP3 audio track appears (page 48).

→ continued

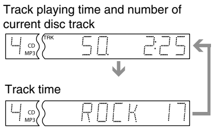
Checking the information on the front panel display

You can view the time information and text displayed on the TV screen also on the front panel display. The information on the front panel display changes as follows when you change the time information on your TV screen.

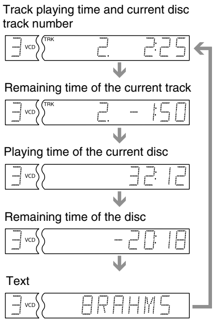
When playing a DVD VIDEO or DVD-RW


Playing time of the current title
5 DVD T 1:03:24
Remaining time of the current title
5 DVD T- 1:15:36
Playing time of the current chapter
5 DVD C 0:22:30
Remaining time of the current chapter
5 DVD C- 0:13:20
Text
5 DVD BRAHMS
Current title and chapter number
5 DVD T 16 8
(returns to top automatically)

When playing a DATA CD (MP3 audio)



When playing a VIDEO CD (without PBC functions) or CD


Track playing time and current disc track number
3 VCD TRK 2 2:25
Remaining time of the current track
3 VCD TRK 2 -1:50
Playing time of the current disc
3 VCD 32:12
Remaining time of the disc
3 VCD -20:18
Text
3 VCD BRAHMS

Hints

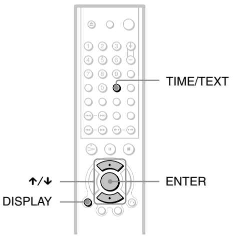
- When playing VIDEO CDs with PBC functions, the disc number, scene number and the playing time are displayed.
- Long text that does not fit in a single line will scroll across the front panel display.
- You can also check the time information and text using the Control Menu (page 12).

Notes

- Depending on the type of disc being played, the DVD/CD text or track name may not be displayed.
- The player can only display the first level of the DVD/CD text, such as the disc name or title.
- Playing time of MP3 audio tracks may not be displayed correctly.

Checking the Play Information

You can check information such as the bit rate or the disc layer that is being played.



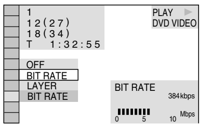
Checking the play information of DVD (ADVANCED) DVD-V DVD-RW

1 Press DISPLAY during playback.

The Control Menu is displayed.

2 Press ↑/↓ to select (ADVANCED), then press ENTER.

The options for "ADVANCED" appear.



3 Press ↑/↓ to select items.

For each item, please refer to "Displays of each item."

- BIT RATE: displays the bit rate.
- LAYER: displays the layer and the pick-up point.

4 Press ENTER.

To close the ADVANCED window

Select "OFF" in step 3.

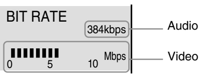
To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

Display of each item

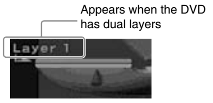
By pressing DISPLAY repeatedly, you can display either "BIT RATE" or "LAYER," whichever was selected in "ADVANCED."

◆**BIT RATE**



Bit rate refers to the amount of video/audio data per second in a disc. While playing a disc, an approximate bit rate of the playback picture is displayed as Mbps (Mega bit per second) and the audio as kbps (kilo bit per second). The higher the bit rate, the larger the amount of data. However, this does not always mean that you can get higher quality pictures or sounds.

◆**LAYER**

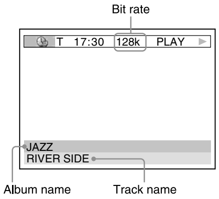


Indicates the approximate point where the disc is playing.
If it is a dual-layer DVD, the player indicates which layer is being read ("Layer 0" or "Layer 1").
For details on the layers, see page 72 (DVD VIDEO).

→ continued

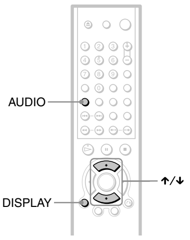
Checking the play information of DATA CD DATA CD

By pressing TIME/TEXT while playing MP3 audio track on a DATA CD, you can display the audio bit rate (the amount of data per second of the current audio).



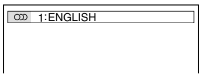
Changing the Sound DVD-V DVD-RW VCD CD DATA CD

When playing a DVD recorded in multiple audio formats (PCM, Dolby Digital or DTS), you can change the audio format. If the DVD is recorded with multilingual tracks, you can also change the language.
With CDs, DATA CDs, or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can hear the instruments from both speakers by selecting the left channel.



1 Press AUDIO during playback.

The following display appears.


1:ENGLISH

2 Press AUDIO repeatedly to select the desired audio signal.

◆ When playing a DVD VIDEO
Depending on the DVD VIDEO, the choice of language varies.
When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 75 to see which language the code represents.
When the same language is displayed two or more times, the DVD VIDEO is recorded in multiple audio formats.

◆ When playing a DVD-RW
The types of sound tracks recorded on a disc are displayed. The default setting is underlined.
Example:
- 1: MAIN (main sound)
- 1: SUB (sub sound)
- 1: MAIN+SUB (main and sub sound)

◆ When playing a VIDEO CD, CD, or DATA CD (MP3 audio)
The default setting is underlined.
- STEREO: The standard stereo sound
- 1/L: The sound of the left channel (monaural)
- 2/R: The sound of the right channel (monaural)

◆ When playing a Super VCD
The default setting is underlined.
- 1:STEREO: The stereo sound of the audio track 1
- 1:1/L: The sound of the left channel of the audio track 1 (monaural)
- 1:2/R: The sound of the right channel of the audio track 1 (monaural)
- 2:STEREO: The stereo sound of the audio track 2
- 2:1/L: The sound of the left channel of the audio track 2 (monaural)
- 2:2/R: The sound of the right channel of the audio track 2 (monaural)

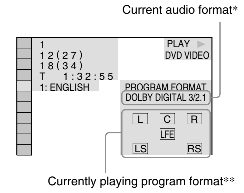
Hint
You can also select "AUDIO" from the Control Menu (page 12).

Note
While playing a Super VCD on which the audio track 2 is not recorded, no sound will come out when you select "2:STEREO","2:1/L" or "2:2/R".

→ continued

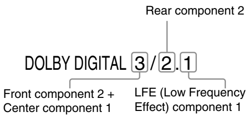
Displaying the audio information of the disc DVD-V

Press DISPLAY during playback to display the Control Menu. Select "AUDIO" using ↑/↓. The channels being played are displayed on the screen.
For example, in Dolby Digital format, multiple signals ranging from monaural to 5.1 channel signals can be recorded on a DVD VIDEO. Depending on the DVD VIDEO, the number of the recorded channels may differ.


1
1 2 (2 7)
1 8 (3 4)
T 1 : 3 2 : 5 5
1: ENGLISH
PLAY ▶
DVD VIDEO
PROGRAM FORMAT
DOLBY DIGITAL 3/2.1

*"PCM," "DTS," or "DOLBY DIGITAL" is displayed.
In the case of "DOLBY DIGITAL," the channels in the playing track are displayed by numbers as follows:

For Dolby Digital 5.1 ch:


Rear component 2
DOLBY DIGITAL 3 / 2 . 1
Front component 2 + Center component 1
LFE (Low Frequency Effect) component 1

**The letters in the program format display mean the following sound component:

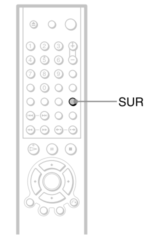
L:	Front (left)
R:	Front (right)
C:	Center
LS:	Rear (left)
RS:	Rear (right)
S:	Rear (monaural): The rear component of the Dolby Surround processed signal and the Dolby Digital signal
LFE:	Low Frequency Effect signal

Hint
For Dolby Digital and DTS, "LFE" is always enclosed in a solid line regardless of the LFE signal component being output.

Note
If "DTS" is set to "OFF" in "AUDIO SETUP" (page 68), the DTS track selection option will not appear on the screen even if the disc contains DTS tracks.

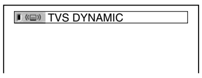
TV Virtual Surround Settings (TVS) DVD-V

When you connect a stereo TV or 2 front speakers, TVS (TV Virtual Surround) lets you enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers (L: left, R: right) without using actual rear speakers. TVS was developed by Sony to produce surround sound for home use using just a stereo TV.
If the player is set up to output the signal from the DIGITAL OUT (COAXIAL or OPTICAL) jack, the surround effect will only heard when "DOLBY DIGITAL" is set to "D-PCM" (page 68).



1 Press SUR during playback.

The following display appears.

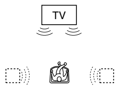

TVS DYNAMIC

2 Press SUR repeatedly to select one of the TVS sounds.

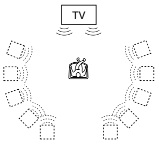
Refer to the following explanations given for each item.
- TVS DYNAMIC
- TVS WIDE
- TVS NIGHT
- TVS STANDARD

To cancel the setting
Select "OFF" in step 2.

◆TVS DYNAMIC
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers (shown below).
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

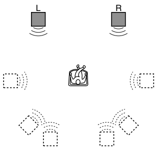


◆TVS WIDE
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below.
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.



◆TVS NIGHT
Large sounds, such as explosions, are suppressed, but the quieter sounds are unaffected. This feature is useful when you want to hear the dialog and enjoy the surround sound effects of "TVS WIDE" at low volume.

◆TVS STANDARD
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. Use this setting when you want to use TVS with 2 separate speakers.



L : Front speaker (left)
R : Front speaker (right)
□ : Virtual speaker

Hints
- You can also select "TVS" by pressing the SURROUND button on the player.
- You can also select "TVS" from the Control Menu (page 12).

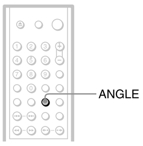
Notes
- When the playing signal does not contain a signal for the rear speakers, the surround effects cannot be heard.
- When you select one of the TVS modes, turn off the surround setting of the connected TV or amplifier (receiver).
- Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings.
- Not all discs will respond to the "TVS NIGHT" function in the same way.

→ continued

Changing the Angles

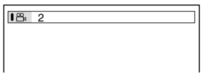
DVD-V

If various angles (multi-angles) for a scene are recorded on the DVD VIDEO, "🎥" appears in the front panel display. This means that you can change the viewing angle.



1 Press ANGLE during playback.

The number of the angle appears on the display.



2 Press ANGLE repeatedly to select the angle number.

The scene changes to the selected angle.

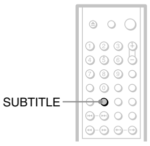
Hint
You can also select "ANGLE" from the Control Menu (page 12).

Note
Depending on the DVD VIDEO, you may not be able to change the angles even if multi-angles are recorded on the DVD VIDEO.

Displaying the Subtitles

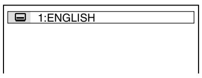
DVD-V **DVD-RW**

If subtitles are recorded on the discs, you can change the subtitles or turn them on and off whenever you want while playing a DVD.



1 Press SUBTITLE during playback.

The following display appears.



2 Press SUBTITLE repeatedly to select the language.

◆ When playing a DVD VIDEO
Select the language.
Depending on the DVD VIDEO, the choice of language varies.
When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 75 to see which language the code represents.

◆ When playing a DVD-RW
Select "ON."

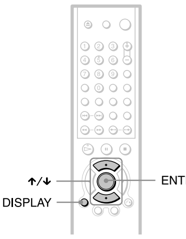
To turn off the subtitles
Select "OFF" in step 2.

Hint
You can also select "SUBTITLE" from the Control Menu (page 12).

Note
Depending on the DVD VIDEO, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. You also may not be able to turn them off.

Adjusting the Picture Quality (BNR) DVD-V DVD-RW VCD

The Block Noise Reduction (BNR) function adjusts the picture quality by reducing the "block noise" or mosaic like patterns that appear on your TV screen.

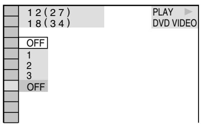


1 Press DISPLAY twice during playback.

The Control Menu appear.

2 Press ↑/↓ to select (BNR), then press ENTER.

The options for "BNR" appears.



3 Press ↑/↓ to select a level.

- 1: reduces the "block noise."
- 2: reduces the "block noise" more than 1.
- 3: reduces the "block noise" more than 2.

4 Press ENTER.

The disc plays with the setting you selected.

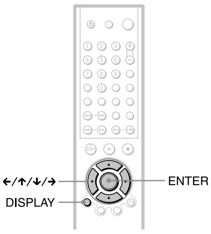
To cancel the "BNR" setting
Select "OFF" in step 3.

To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

Notes
- If the outlines of the images on your screen should become blurred, set "BNR" to "OFF."
- Depending on the disc or the scene being played, there may be no "BNR" effect, or it maybe hard to discern.

Adjusting the Playback Picture (CUSTOM PICTURE MODE) DVD-V DVD-RW VCD

You can adjust the video signal of the DVD or VIDEO CD from the player to obtain the picture quality you want. Choose the setting that best suits the program you are watching. When you select "MEMORY," you can make further adjustments to each element of the picture (color, brightness, etc.).

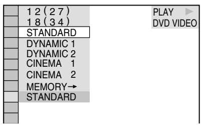


1 Press DISPLAY twice during playback.

The Control Menu appears.

2 Press ↑/↓ to select (CUSTOM PICTURE MODE), then press ENTER.

The options for "CUSTOM PICTURE MODE" appears.



3 Press ↑/↓ to select the setting you want, then press ENTER.

The default setting is underlined.

- <u>STANDARD</u>: displays a standard picture.
- DYNAMIC 1: produces a bold dynamic picture by increasing the picture contrast and the color intensity.
- DYNAMIC 2: produces a more dynamic picture than DYNAMIC 1 by further increasing the picture contrast and the color intensity.
- CINEMA 1: enhances details in dark areas by increasing the black level.
- CINEMA 2: White colors become brighter and black colors become richer, and the color contrast is increased.
- MEMORY: adjusts the picture in greater detail.

Hints
- When you watch a movie, "CINEMA 1" or "CINEMA 2" is recommended.
- The picture can be adjusted by pressing the PICTURE MODE button on the player as well.

→ continued

Adjusting the picture items in "MEMORY"

You can adjust each element of the picture individually.
- PICTURE: changes the contrast
- BRIGHTNESS: changes the overall brightness
- COLOR: makes the colors deeper or lighter
- HUE: changes the color balance

1 Press ↑/↓ to select "MEMORY" then press ENTER.

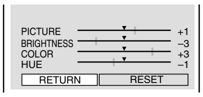
The "PICTURE" adjustment bar appears.

2 Press ←/→ to adjust the picture contrast, then press ENTER.

The adjustment is saved, and "BRIGHTNESS" adjustment bar appears.

3 Repeat step 2 to adjust "BRIGHTNESS," "COLOR," and "HUE."

The Custom Picture Mode display appears. You can check each adjustment.

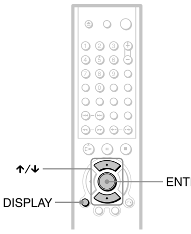


To turn off the display
Press ↶ RETURN, or select "RETURN" in step 3 and press ENTER.

Hints
- To reset the picture items to the default values, press → after step 3 to select "RESET" and press ENTER.
- If you do not want to save your adjustment in step 2, you can go to the next picture adjustment item by pressing ↑/↓ without saving.

Enhancing the Playback Picture (DIGITAL VIDEO ENHANCER) DVD-V DVD-RW VCD

The Digital Video Enhancer (DVE) function makes the picture appear clear and crisp by enhancing the outlines of images on your TV screen. Also, this function can soften the images on the screen.

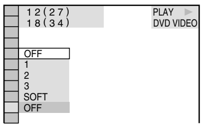


1 Press DISPLAY twice during playback.

The Control Menu appears.

2 Press ↑/↓ to select (DIGITAL VIDEO ENHANCER), then press ENTER.

The options for "DIGITAL VIDEO ENHANCER" appear.



3 Press ↑/↓ to select a level.

- 1: enhances the outline.
- 2: enhances the outline more than 1.
- 3: enhances the outline more than 2.
- SOFT: softens the image (DVD only)

4 Press ENTER.

The disc plays with the setting you selected.

To cancel the "DIGITAL VIDEO ENHANCER" setting

Select "OFF" in step 3.

To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

Note

Depending on the disc or the scene being played, noise found in the disc may become more apparent. If this happens, it is recommended that you use the BNR function (page 54) with the DVE function. If the condition still does not improve, reduce the Digital Video Enhancer level, or select "SOFT" (DVD only) in step 3 above.

Locking Discs (CUSTOM PARENTAL CONTROL, PARENTAL CONTROL)

You can set two kinds of playback restrictions for the desired disc.

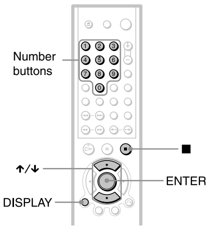
- Custom Parental Control
  You can set playback restrictions so that the player will not play inappropriate discs.
- Parental Control
  Playback of some DVD VIDEOs can be limited according to a predetermined level such as the age of the users. Scenes may be blocked or replaced with different scenes.

The same password is used for both Parental Control and Custom Parental Control.

Custom Parental Control

DVD-V VCD CD

You can set the same Custom Parental Control password for up to 40 discs. When you set the 41st-disc, the first disc is canceled.



1 Insert the disc you want to lock.

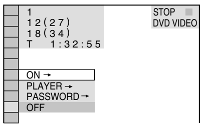
If the disc is playing, press ■ to stop playback.

2 Press DISPLAY while the player is in stop mode.

The Control Menu appears.

3 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.

The options for "PARENTAL CONTROL" appear.

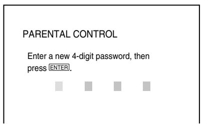


```
1                 STOP
12(27)            DVD VIDEO
18(34)
T   1:32:55

ON →
PLAYER →
PASSWORD →
OFF
```

4 Press ↑/↓ to select "ON →," then press ENTER.

◆ If you have not entered a password

The display for registering a new password appears.

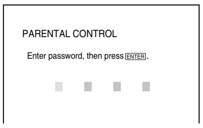


```
PARENTAL CONTROL
Enter a new 4-digit password, then
press ENTER.
```

Enter a 4-digit password using the number buttons, then press ENTER.
The display for confirming the password appears.

◆ When you have already registered a password

The display for entering the password appears.



```
PARENTAL CONTROL
Enter password, then press ENTER.
```

5 Enter or re-enter your 4-digit password using the number buttons, then press ENTER.

"Custom parental control is set." appears and the screen returns to the Control Menu.

To turn off the Custom Parental Control function

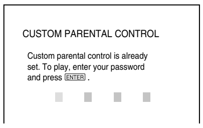
1 Follow steps 1 through 3 of "Custom Parental Control."

2 Press ↑/↓ to select "OFF →," then press ENTER.

3 Enter your 4-digit password using the number buttons, then press ENTER.

To play a disc for which Custom Parental Control is set

1 Insert the disc for which Custom Parental Control is set.
The "CUSTOM PARENTAL CONTROL" display appears.



```
CUSTOM PARENTAL CONTROL
Custom parental control is already
set. To play, enter your password
and press ENTER .
```

2 Enter your 4-digit password using the number buttons, then press ENTER.
The player is ready for playback.

Hint

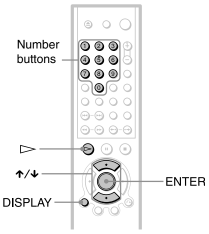
If you forget your password, enter the 6-digit number "199703" using the number buttons when the "CUSTOM PARENTAL CONTROL" display asks you for your password, then press ENTER. The display will ask you to enter a new 4-digit password.

Note

Once you set Custom Parental Control with a recorded disc such as a DVD-RW, the display for entering the password may appear again when you insert a different recorded disc. Input the password to play the disc.

Parental Control (limited playback) DVD-V

Playback of some DVD VIDEOs can be limited according to a predetermined level such as the age of the users. The "PARENTAL CONTROL" function allows you to set a playback limitation level.

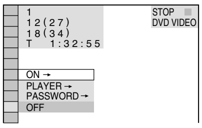


1 Press DISPLAY while the player is in stop mode.

The Control Menu appears.

2 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.

The options for "PARENTAL CONTROL" appear.



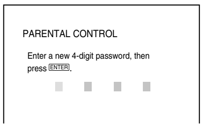
```
1                 STOP
12(27)            DVD VIDEO
18(34)
T   1:32:55

ON →
PLAYER →
PASSWORD →
OFF
```

3 Press ↑/↓ to select "PLAYER →," then press ENTER.

◆ If you have not entered a password

The display for registering a new password appears.

→ continued

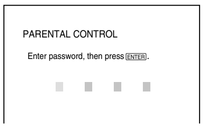


```
PARENTAL CONTROL
Enter a new 4-digit password, then
press ENTER.
```

Enter a 4-digit password using the number buttons, then press ENTER.
The display for confirming the password appears.

◆ When you have already registered a password

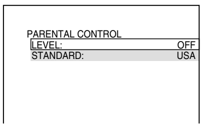
The display for entering the password appears.



```
PARENTAL CONTROL
Enter password, then press ENTER.
```

4 Enter or re-enter your 4-digit password using the number buttons, then press ENTER.

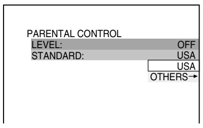
The display for setting the playback limitation level appears.



```
PARENTAL CONTROL
LEVEL:                OFF
STANDARD:             USA
```

5 Press ↑/↓ to select "STANDARD," then press ENTER.

The selection items for "STANDARD" are displayed.



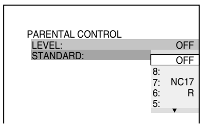
```
PARENTAL CONTROL
LEVEL:                OFF
STANDARD:             USA
                      USA
                  OTHERS→
```

6 Press ↑/↓ to select a geographic area as the playback limitation level, then press ENTER.

The area is selected.
When you select "OTHERS →," select and enter a standard code in the table on page 61.

7 Press ↑/↓ to select "LEVEL," then press ENTER.

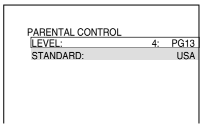
The selection items for "LEVEL" are displayed.



```
PARENTAL CONTROL
LEVEL:                OFF
STANDARD:             OFF
                  8:
                  7:  NC17
                  6:     R
                  5:
                     ▼
```

8 Select the level you want using ↑/↓, then press ENTER.

Parental Control setting is complete.



```
PARENTAL CONTROL
LEVEL:            4:  PG13
STANDARD:             USA
```

The lower the value, the stricter the limitation.

To turn off the Parental Control function

Set "LEVEL" to "OFF" in step 8.

To play a disc for which Parental Control is set

1 Insert the disc and press ▷.
The display for entering your password appears.

2 Enter your 4-digit password using the number buttons, then press ENTER.
The player starts playback.

Hint
If you forget your password, remove the disc and repeat steps 1 to 3 of "Parental Control (limited playback)." When you are asked to enter your password, enter "199703" using the number buttons, then press ENTER. The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password, replace the disc in the player and press ▷. When the display for entering your password appears, enter your new password.

Notes
- When you play discs which do not have the Parental Control function, playback cannot be limited on this player.
- Depending on the disc, you may be asked to change the parental control level while playing the disc. In this case, enter your password, then change the level. If the Resume Play mode is canceled, the level returns to the previous level.

Area Code

Standard	Code number	Standard	Code number
Argentina	2044	Malaysia	2363
Australia	2047	Mexico	2362
Austria	2046	Netherlands	2376
Belgium	2057	New Zealand	2390
Brazil	2070	Norway	2379
Canada	2079	Pakistan	2427
Chile	2090	Philippines	2424
China	2092	Portugal	2436
Denmark	2115	Russia	2489
Finland	2165	Singapore	2501
France	2174	Spain	2149
Germany	2109	Sweden	2499
India	2248	Switzerland	2086
Indonesia	2238	Thailand	2528
Italy	2254	United Kingdom	2184
Japan	2276		
Korea	2304		

Changing the password

1 **Press DISPLAY while the player is in stop mode.**
The Control Menu appears.

2 **Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.**
The options for "PARENTAL CONTROL" appear.

3 **Press ↑/↓ to select "PASSWORD →," then press ENTER.**
The display for entering the password appears.

4 **Enter your 4-digit password using the number buttons, then press ENTER.**

5 **Enter a new 4-digit password using the number buttons, then press ENTER.**

6 **To confirm your password, re-enter it using the number buttons, then press ENTER.**

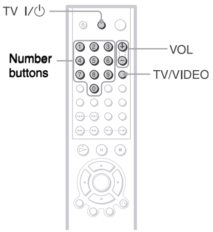
If you make a mistake entering your password
Press ← before you press ENTER and input the correct number.

If you make a mistake
Press RETURN.

To turn off the display
Press DISPLAY repeatedly until the display is turned off.

Controlling Your TV with the Supplied Remote

You can control the sound level, input source, and power switch of your Sony TV with the supplied remote.



You can control the following items with the supplied remote.

By pressing	You can
TV I/⏻	Turn the TV on or off
VOL +/–	Adjust the volume of the TV
TV/VIDEO	Switch the TV's input source between the TV and other input sources

Note
Depending on the unit being connected, you may not be able to control your TV using some of the buttons.

Controlling other TVs with the remote

You can control the sound level, input source, and power switch of non-Sony TVs as well. If your TV is listed in the table below, set the appropriate manufacturing code.

1 **While holding down TV I/⏻, press the number buttons to select your TV's manufacturer's code (see the table below).**

2 **Release TV I/⏻.**

Code numbers of controllable TVs

Manufacturer	Code number
Sony (default)	01
JVC	09
Panasonic	19
Philips	21
RCA	10
Samsung	20
Sanyo	11
Sharp	18
Toshiba	07
Zenith	15

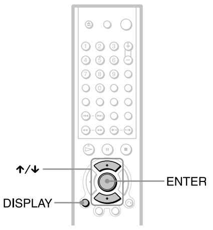
Notes
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number you have set may be reset to the default setting. Set the appropriate code number again.

Settings and Adjustments

Using the Setup Display

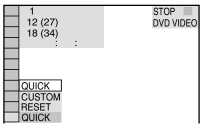
By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things. For details on each Setup Display item, see pages from 64 to 68.

Note
Playback settings stored in the disc take priority over the Setup Display settings and not all the functions described may work.



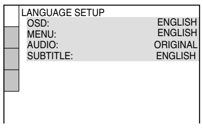
1 **Press DISPLAY when the player is in stop mode.**
The Control Menu appears.

2 **Press ↑/↓ to select (SETUP), then press ENTER.**
The options for "SETUP" appear.



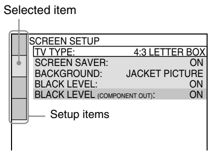
```
  1                     STOP
  12 (27)               DVD VIDEO
  18 (34)
        :    :

QUICK
CUSTOM
RESET
QUICK
```

3 **Press ↑/↓ to select "CUSTOM," then press ENTER.**
The Setup Display appears.



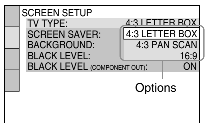
```
LANGUAGE SETUP
 OSD:                ENGLISH
 MENU:               ENGLISH
 AUDIO:             ORIGINAL
 SUBTITLE:           ENGLISH
```

4 **Press ↑/↓ to select the setup item from the displayed list: "LANGUAGE SETUP," "SCREEN SETUP," "CUSTOM SETUP," or "AUDIO SETUP." Then press ENTER.**
The Setup item is selected.
Example: "SCREEN SETUP"



```
SCREEN SETUP
 TV TYPE:                      4:3 LETTER BOX
 SCREEN SAVER:                             ON
 BACKGROUND:               JACKET PICTURE
 BLACK LEVEL:                              ON
 BLACK LEVEL (COMPONENT OUT):              ON
```

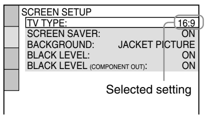
5 **Select an item using ↑/↓, then press ENTER.**
The options for the selected item appear.
Example: "TV TYPE"



```
SCREEN SETUP
 TV TYPE:                      4:3 LETTER BOX
 SCREEN SAVER:                 4:3 LETTER BOX
 BACKGROUND:                     4:3 PAN SCAN
 BLACK LEVEL:                            16:9
 BLACK LEVEL (COMPONENT OUT):              ON
```

→ continued

6 **Select a setting using ↑/↓, then press ENTER.**
The setting is selected and setup is complete.
Example: "16:9"



```
SCREEN SETUP
 TV TYPE:                              16:9
 SCREEN SAVER:                           ON
 BACKGROUND:             JACKET PICTURE
 BLACK LEVEL:                            ON
 BLACK LEVEL (COMPONENT OUT):            ON
```

To turn off the display
Press DISPLAY repeatedly until the display is turned off.

To enter the Quick Setup mode
Select "QUICK" in step 3. Follow from step 5 of the Quick Setup explanation to make basic adjustments (page 24).

To reset all of the "SETUP" settings

1 Select "RESET" in step 3 and press ENTER

2 Select "YES" using ↑/↓.
You can also quit the process and return to the Control Menu by selecting "NO" here.

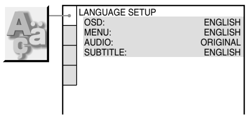
3 Press ENTER.
All the settings explained on pages 64 to 68 return to the default settings. Do not press I/⏻ while resetting the player as it takes a few seconds to complete.

Setting the Display or Sound Track Language

(LANGUAGE SETUP)

"LANGUAGE SETUP" allows you to set various languages for the on-screen display or sound track.

Select "LANGUAGE SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 63).



```
LANGUAGE SETUP
 OSD:                ENGLISH
 MENU:               ENGLISH
 AUDIO:             ORIGINAL
 SUBTITLE:           ENGLISH
```

◆ OSD (On-Screen Display)
Switches the display language on the screen.

◆ MENU (DVD VIDEO only)
You can select the desired language for the disc's menu.

◆ AUDIO (DVD VIDEO only)
Switches the language of the sound track.
When you select "ORIGINAL," the language given priority in the disc is selected.

◆ SUBTITLE (DVD VIDEO only)
Switches the language of the subtitle recorded on the DVD VIDEO.
When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language you selected for the sound track.

Hint
If you select "OTHERS →" in "MENU," "SUBTITLE," and "AUDIO," select and enter a language code from "Language Code List" on page 75 using the number buttons.

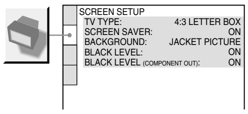
Note
When you select a language in "MENU," "SUBTITLE," or "AUDIO" that is not recorded on the DVD VIDEO, one of the recorded languages will be automatically selected.

Settings for the Display

(SCREEN SETUP)

Choose settings according to the TV to be connected.

Select “SCREEN SETUP” in the Setup Display. To use the display, see “Using the Setup Display” on page 63.
The default settings are underlined.



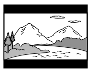
```
SCREEN SETUP
  TV TYPE:                          4:3 LETTER BOX
  SCREEN SAVER:                                 ON
  BACKGROUND:                      JACKET PICTURE
  BLACK LEVEL:                                  ON
  BLACK LEVEL (COMPONENT OUT):                  ON
```

◆ TV TYPE

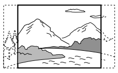
Selects the aspect ratio of the connected TV (4:3 standard or wide).

4:3 LETTER BOX	Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
4:3 PAN SCAN	Select this when you connect a 4:3 screen TV. Automatically displays the wide picture on the entire screen and cuts off the portions that do not fit.
16:9	Select this when you connect a wide-screen TV or a TV with a wide mode function.

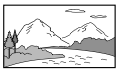
4:3 LETTER BOX



4:3 PAN SCAN



16:9



Note

Depending on the DVD, “4:3 LETTER BOX” may be selected automatically instead of “4:3 PAN SCAN” or vice versa.

◆ SCREEN SAVER

The screen saver image appears when you leave the player in pause or stop mode for 15 minutes, or when you play back a CD or DATA CD (MP3 audio) for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press ▷ to turn off the screen saver.

ON	Turns on the screen saver.
OFF	Turns off the screen saver.

◆ BACKGROUND

Selects the background color or picture on the TV screen in stop mode or while playing a CD or DATA CD (MP3 audio).

JACKET PICTURE	The jacket picture (still picture) appears, but only when the jacket picture is already recorded on the disc (CD-EXTRA, etc.). If the disc does not contain a jacket picture, the “GRAPHICS” picture appears.
GRAPHICS	A preset picture stored in the player appears.
BLUE	The background color is blue.
BLACK	The background color is black.

◆ BLACK LEVEL

Selects the black level (setup level) for the video signals output from the jacks other than COMPONENT VIDEO OUT.

ON	Sets the black level of the output signal to the standard level.
OFF	Lowers the standard black level. Use this when the picture becomes too white.

→ continued

◆ BLACK LEVEL (COMPONENT OUT)

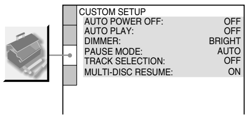
Selects the black level (setup level) for the video signals output from the COMPONENT VIDEO OUT jacks.
You cannot select this when the player outputs progressive signal and the PROGRESSIVE indicator lights up in blue on the front panel.

ON	Sets the black level of the output signal to the standard level.
OFF	Lowers the standard black level. Use this when the picture becomes too white.

Custom Settings (CUSTOM SETUP)

Use this to set up playback related and other settings.

Select “CUSTOM SETUP” in the Setup Display. To use the display, see “Using the Setup Display” (page 63).
The default settings are underlined.



```
CUSTOM SETUP
  AUTO POWER OFF:            OFF
  AUTO PLAY:                 OFF
  DIMMER:                 BRIGHT
  PAUSE MODE:               AUTO
  TRACK SELECTION:           OFF
  MULTI-DISC RESUME:          ON
```

◆ AUTO POWER OFF

Switches the Auto Power Off setting on or off.

OFF	Switches this function off.
ON	The player enters standby mode when left in stop mode for more than 30 minutes.

◆ AUTO PLAY

Switches the Auto Play setting on or off. This function is useful when the player is connected to a timer (not supplied).

OFF	Switches this function off.
ON	Automatically starts playback when the player is turned on.

◆ DIMMER

Adjusts the lighting of the front panel display.

BRIGHT	Makes the lighting bright.
DARK	Makes the lighting dark.

◆ PAUSE MODE (DVD VIDEO/DVD-RW only)

Selects the picture in pause mode.

AUTO	The picture, including subjects that move dynamically, is output with no jitter. Normally select this position.
FRAME	The picture, including subjects that do not move dynamically, is output in high resolution.

◆ TRACK SELECTION (DVD VIDEO only)

Gives the sound track which contains the highest number of channels priority when you play a DVD VIDEO on which multiple audio formats (PCM, DTS, or Dolby Digital format) are recorded.

OFF	No priority given.
AUTO	Priority given.

Notes

- When you set the item to “AUTO,” the language may change. The “TRACK SELECTION” setting has higher priority than the “AUDIO” settings in “LANGUAGE SETUP” (page 64).
- If you set “DTS” to “OFF” (page 68), the DTS sound track is not played even if you set “TRACK SELECTION” to “AUTO.”
- If PCM, DTS, and Dolby Digital sound tracks have the same number of channels, the player selects PCM, DTS, and Dolby Digital sound tracks in this order.

◆ MULTI-DISC RESUME (DVD VIDEO/VIDEO CD only)

Switches the Multi-disc Resume setting on or off. Resume playback point can be stored in memory for up to 6 different DVD VIDEO/VIDEO CD discs (page 30).

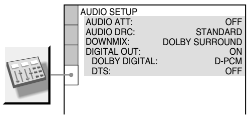
ON	Stores the resume settings in memory for up to six discs (The settings remain in memory even if you select “OFF.”)
OFF	Does not store the resume settings in memory. Playback restarts at the resume point only for the current disc in the player.

Settings for the Sound

(AUDIO SETUP)

“AUDIO SETUP” allows you to set the sound according to the playback and connection conditions.

Select “AUDIO SETUP” in the Setup Display. To use the display, see “Using the Setup Display” (page 63).
The default settings are underlined.



```
AUDIO SETUP
  AUDIO ATT:                        OFF
  AUDIO DRC:                   STANDARD
  DOWNMIX:              DOLBY SURROUND
  DIGITAL OUT:                       ON
    DOLBY DIGITAL:                D-PCM
    DTS:                            OFF
```

◆ AUDIO ATT (attenuation)

If the playback sound is distorted, set this item to “ON.” The player reduces the audio output level.
This function affects the output of the LINE OUT L/R (AUDIO) jack.

OFF	Normally, select this position.
ON	Select this when the playback sound from the speakers is distorted.

◆ AUDIO DRC (Dynamic Range Control) (DVD VIDEO/DVD-RW only)

Makes the sound clear when the volume is turned down when playing a DVD that conforms to “AUDIO DRC.” This affects the output from the following jacks:
– LINE OUT L/R (AUDIO) jack
– DIGITAL OUT (COAXIAL or OPTICAL) jack only when “DOLBY DIGITAL” is set to “D-PCM” (page 68).

STANDARD	Normally select this position.
TV MODE	Makes the low sounds clear even if you turn the volume down.
WIDE RANGE	Gives you the feeling of being at a live performance.

→ continued

◆ DOWNMIX (DVD only)

Switches the method for mixing down to 2 channels when you play a DVD which has rear sound elements (channels) or is recorded in Dolby Digital format. For details on the rear signal components, see “Displaying the audio information of the disc” (page 50). This function affects the output of the following jacks:
– LINE OUT L/R (AUDIO) jack
– DIGITAL OUT (COAXIAL or OPTICAL) jack when “DOLBY DIGITAL” is set to “D-PCM” (page 68).

DOLBY SURROUND	Normally, select this position. Multi-channel audio signals are output to two channels for enjoying surround sounds.
NORMAL	Multi-channel audio signals are downmixed to two channels for use with your stereo.

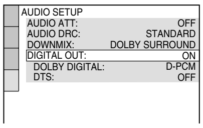
◆ DIGITAL OUT

Selects if audio signals are output via the DIGITAL OUT (COAXIAL or OPTICAL) jack.

ON	Normally select this position. When you select “ON,” see “Setting the digital output signal” for further settings.
OFF	The influence of the digital circuit upon the analog circuit is minimal.

Setting the digital output signal

Switches the method of outputting audio signals when you connect a component such as an amplifier (receiver) or MD deck with a digital input jack.
For connection details, see page 19.
Select “DOLBY DIGITAL” and “DTS” after setting “DIGITAL OUT” to “ON.”



```
AUDIO SETUP
  AUDIO ATT:                        OFF
  AUDIO DRC:                   STANDARD
  DOWNMIX:              DOLBY SURROUND
  DIGITAL OUT:                       ON
    DOLBY DIGITAL:                D-PCM
    DTS:                            OFF
```

If you connect a component that does not conform to the selected audio signal, a loud noise (or no sound) will come out from the speakers, damaging your ears or speakers.

◆ DOLBY DIGITAL (DVD VIDEO/DVD-RW only)

Selects the type of Dolby Digital signal.

D-PCM	Select this when the player is connected to an audio component lacking a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the “DOWNMIX” item in “AUDIO SETUP” (page 68).
DOLBY DIGITAL	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder.

◆ DTS (DVD VIDEO only)

Selects whether or not to output DTS signal.

OFF	Select this when the player is connected to an audio component lacking a built-in DTS decoder.
ON	Select this when the player is connected to an audio component with a built-in DTS decoder.

Troubleshooting

If you experience any of the following difficulties while using the player, use this troubleshooting guide to help remedy the problem before requesting repairs.
Should any problem persist, consult your nearest Sony dealer (for customers in the U.S.A only).

Power

The power is not turned on.

➡ Check that the AC power cord is connected securely.

Picture

There is no picture/picture noise appears.

➡ Re-connect the connecting cord securely.
➡ The connecting cord is damaged.
➡ Check the connection to your TV (page 16) and switch the input selector on your TV so that the signal from the player appears on the TV screen.
➡ The disc is dirty or flawed.
➡ If the picture output from your player goes through your VCR to get to your TV or if you are connected to a combination TV/VIDEO player, the copy-protection signal applied to some DVD programs could affect picture quality. If you still experience problems even when you connect your player directly to your TV, please try connecting your player to your TV's S VIDEO input (page 16).

Even though you set the aspect ratio in "TV TYPE" of "SCREEN SETUP," the picture does not fill the screen.

➡ The aspect ratio of the disc is fixed on your DVD.

Sound

There is no sound.

➡ Re-connect the connecting cord securely.
➡ The connecting cord is damaged.
➡ The player is connected to the wrong input jack on the amplifier (receiver) (page 21, 22, 23).
➡ The amplifier (receiver) input is not correctly set.
➡ The player is in pause mode or in Slow-motion Play mode.
➡ The player is in fast forward or fast reverse mode.
➡ If the audio signal does not come through the DIGITAL OUT (COAXIAL or OPTICAL) jack, check the audio settings (page 68).
➡ While playing a Super VCD on which the audio track 2 is not recorded, no sound will come out when you select "2:STEREO", "2:1/L" or "2:2/R".

Sound is noisy.

➡ When playing a CD with DTS sound tracks, noise will come from the LINE OUT L/R (AUDIO) jack or DIGITAL OUT (COAXIAL or OPTICAL) jack (page 27).

Sound distortion occurs.

➡ Set "AUDIO ATT" in "AUDIO SETUP" to "ON" (page 67).

The sound volume is low.

➡ The sound volume is low on some DVDs. The sound volume may improve if you set "AUDIO DRC" to "TV MODE" (page 67).
➡ Set "AUDIO ATT" in "AUDIO SETUP" to "OFF" (page 67).

Operation

The remote does not function.

➡ There are obstacles between the remote and the player.
➡ The distance between the remote and the player is too far.
➡ The remote is not pointed at the remote sensor on the player.
➡ The batteries in the remote are weak.

→ continued

The disc does not play.

➡ The disc is turned over.
Insert the disc with the playback side facing down on the disc tray.
➡ The disc is skewed.
➡ The player cannot play certain discs (page 6).
➡ The region code on the DVD does not match the player.
➡ Moisture has condensed inside the player (page 3).
➡ The player cannot play a recorded disc that is not correctly finalized (page 6).

The MP3 audio track cannot be played (page 34).

➡ The DATA CD is not recorded in the MP3 format that conforms to ISO9660 Level 1/Level 2 or Joliet.
➡ The MP3 audio track does not have the extension ".MP3."
➡ The data is not formatted in MP3 even though it has the extension ".MP3."
➡ The data is not MPEG1 Audio Layer 3 data.
➡ The player cannot play audio tracks in MP3PRO format.

"Copyright lock" appears and the screen turns blue when playing a DVD-RW disc.

➡ Images taken from digital broadcasts, etc., may contain copy protection signals, such as complete copy protection signals, single copy signals, and restriction-free signals. When images that contain copy protection signals are played, a blue screen may appear instead of the images. It may take a while when looking for playable images.

The title of the MP3 audio album or track is not correctly displayed.

➡ The player can only display numbers and alphabet. Other characters are displayed as "*".

The disc does not start playing from the beginning.

➡ Program Play, Shuffle Play, Repeat Play, or A-B Repeat Play has been selected (page 36).
➡ Resume play has taken effect (page 30).

The player starts playing the disc automatically.

➡ The disc features an auto playback function.
➡ "AUTO PLAY" in "CUSTOM SETUP" is set to "ON" (page 66).

Playback stops automatically.

➡ While playing discs with an auto pause signal, the player stops playback at the auto pause signal.

You cannot perform some functions such as Stop, Search, Slow-motion Play, Repeat Play, Shuffle Play, or Program Play.

➡ Depending on the disc, you may not be able to do some of the operations above. See the operating manual that comes with the disc.

The language for the sound track cannot be changed.

➡ Try using the DVD's menu instead of the direct selection button on the remote (page 31).
➡ Multilingual tracks are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the language for the sound track.

The subtitle language cannot be changed or turned off.

➡ Try using the DVD's menu instead of the direct selection button on the remote (page 31).
➡ Multilingual subtitles are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the subtitles.

The angles cannot be changed.

➡ Try using the DVD's menu instead of the direct selection button on the remote (page 31).
➡ Multi-angles are not recorded on the DVD being played.
➡ The angle can only be changed when the "ANGLE" indicator lights up on the front panel display (page 9).
➡ The DVD prohibits changing of the angles.

The player does not operate properly.

➡ When static electricity, etc., causes the player to operate abnormally, unplug the player.

5 numbers or letters are displayed on the screen and on the front panel display.

➡ The self-diagnosis function was activated. (See the table on page 71.)

The disc tray does not open and "LOCKED" appears on the front panel display.

➡ Child Lock is set (page 29).

The disc tray does not open and "TRAY LOCKED" appears on the front panel display.

➡ Contact your Sony dealer or local authorized Sony service facility.

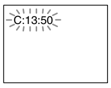
"Data error" appears on the TV screen when playing a DATA CD.

➡ The MP3 audio track you want to play is broken.
➡ The data is not MPEG1 Audio Layer 3 data.

Self-diagnosis Function

(When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the player from malfunctioning, a five-character service number (e.g., C 13 50) with a combination of a letter and four digits appears on the screen and the front panel display. In this case, check the following table.



First three characters of the service number	Cause and/or corrective action
C 13	The disc is dirty. ➡ Clean the disc with a soft cloth (page 7).
C 31	The disc is not inserted correctly. ➡ Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the player has performed the self-diagnosis function. ➡ Contact your nearest Sony dealer or local authorized Sony service facility and give the 5-character service number. Example: E 61 10

Glossary

Chapter (page 46)

Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

Dolby Digital (page 23, 68)

Digital audio compression technology developed by Dolby Laboratories. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same 5.1 discrete channels of high quality digital audio found in Dolby Digital cinema audio systems. Good channel separation is realized because all of the channel data are recorded discretely and little deterioration is realized because all channel data processing is digital.

Dolby Surround (Pro Logic) (page 22)

Audio signal processing technology that Dolby Laboratories developed for surround sound. When the input signal contains a surround component, the Pro Logic process outputs the front, center and rear signals. The rear channel is monaural.

DTS (page 23, 68)

Digital audio compression technology that Digital Theater Systems, Inc. developed. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same 5.1 discrete channels of high quality digital audio.
Good channel separation is realized because all of the channel data is recorded discretely and little deterioration is realized because all channel data processing is digital.

DVD VIDEO (page 6)

A disc that contains up to 8 hours of moving pictures even though its diameter is the same as a CD.
The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5 GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17 GB.
The picture data uses the MPEG 2 format, one of the worldwide standards of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in a multi-channel format, such as Dolby Digital, allowing you to enjoy a more real audio presence.
Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided with the DVD.

DVD-RW (page 6)

A DVD-RW is a recordable and rewritable disc with the same size as the DVD VIDEO. The DVD-RW can be recorded in two different modes: VR mode and Video mode. VR (Video Recording) mode enables various programming and editing functions, some of which are limited in the case of Video mode. Video mode complies with DVD VIDEO format and can be played on other DVD players while a DVD-RW recorded in VR mode can only be played on DVD-RW compliant players. The "DVD-RW" appearing in this manual, and the on-screen displays refer to DVD-RWs in VR mode.

DVD+RW (page 6)

A DVD+RW (plus RW) is a recordable and rewritable disc. DVD+RWs use a recording format that is comparable to the DVD VIDEO format.

Film based software, Video based software (page 18)

DVDs can be classified as Film based or Video based software. Film based DVDs contain the same images (24 frames per second) that are shown at movie theaters. Video based DVDs, such as television dramas or sit-coms, display images at 30 frames/60 fields (25 frames/50 fields) per second.

Interlace format (page 18)

Interlace format shows every other line of an image as a single "field" and is the standard method for displaying images on television. The even number field shows the even numbered lines of an image, and the odd numbered field shows the odd numbered lines of an image.

Index (CD)/Video Index (VIDEO CD) (page 12)

A number that divides a track into sections to easily locate the point you want on a CD or VIDEO CD. Depending on the disc, no index may be recorded.

Progressive format (page 18)

Compared to the Interlace format that alternately shows every other line of an image (field) to create one frame, the Progressive format shows the entire image at once as a single frame. This means that while the Interlace format can show 30 frames (60 fields) in one second, the Progressive format can show 60 frames in one second. The overall picture quality increases and still images, text, and horizontal lines appear sharper. This player is compatible with the 480 progressive format.

Scene (page 46)

On a VIDEO CD with PBC (playback control) functions, the menu screens, moving pictures and still pictures are divided into sections called "scenes."

Title (page 9)

The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

Track (page 9)

Sections of a picture or a music feature on a CD or VIDEO CD (the length of a song).

Language Code List

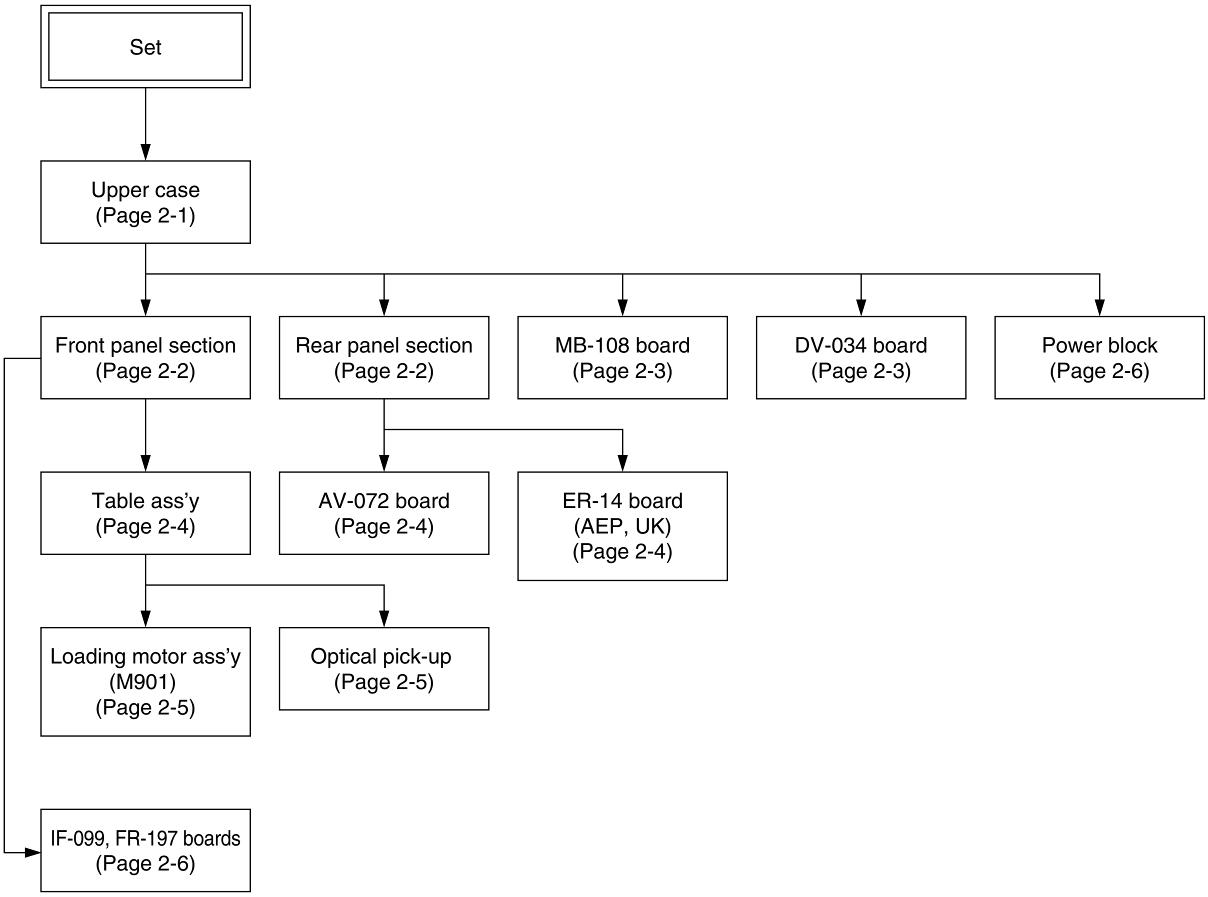
For details, see pages 49, 53, 64.
The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code	Language	Code	Language	Code	Language	Code	Language
1027	Afar	1183	Irish	1347	Maori	1507	Samoan
1028	Abkhazian	1186	Scots Gaelic	1349	Macedonian	1508	Shona
1032	Afrikaans	1194	Galician	1350	Malayalam	1509	Somali
1039	Amharic	1196	Guarani	1352	Mongolian	1511	Albanian
1044	Arabic	1203	Gujarati	1353	Moldavian	1512	Serbian
1045	Assamese	1209	Hausa	1356	Marathi	1513	Siswati
1051	Aymara	1217	Hindi	1357	Malay	1514	Sesotho
1052	Azerbaijani	1226	Croatian	1358	Maltese	1515	Sundanese
1053	Bashkir	1229	Hungarian	1363	Burmese	1516	Swedish
1057	Byelorussian	1233	Armenian	1365	Nauru	1517	Swahili
1059	Bulgarian	1235	Interlingua	1369	Nepali	1521	Tamil
1060	Bihari	1239	Interlingue	1376	Dutch	1525	Telugu
1061	Bislama	1245	Inupiak	1379	Norwegian	1527	Tajik
1066	Bengali; Bangla	1248	Indonesian	1393	Occitan	1528	Thai
1067	Tibetan	1253	Icelandic	1403	(Afan)Oromo	1529	Tigrinya
1070	Breton	1254	Italian	1408	Oriya	1531	Turkmen
1079	Catalan	1257	Hebrew	1417	Punjabi	1532	Tagalog
1093	Corsican	1261	Japanese	1428	Polish	1534	Setswana
1097	Czech	1269	Yiddish	1435	Pashto; Pushto	1535	Tonga
1103	Welsh	1283	Javanese	1436	Portuguese	1538	Turkish
1105	Danish	1287	Georgian	1463	Quechua	1539	Tsonga
1109	German	1297	Kazakh	1481	Rhaeto-Romance	1540	Tatar
1130	Bhutani	1298	Greenlandic	1482	Kirundi	1543	Twi
1142	Greek	1299	Cambodian	1483	Romanian	1557	Ukrainian
1144	English	1300	Kannada	1489	Russian	1564	Urdu
1145	Esperanto	1301	Korean	1491	Kinyarwanda	1572	Uzbek
1149	Spanish	1305	Kashmiri	1495	Sanskrit	1581	Vietnamese
1150	Estonian	1307	Kurdish	1498	Sindhi	1587	Volapük
1151	Basque	1311	Kirghiz	1501	Sangho	1613	Wolof
1157	Persian	1313	Latin	1502	Serbo-Croatian	1632	Xhosa
1165	Finnish	1326	Lingala	1503	Singhalese	1665	Yoruba
1166	Fiji	1327	Laothian	1505	Slovak	1684	Chinese
1171	Faroese	1332	Lithuanian	1506	Slovenian	1697	Zulu
1174	French	1334	Latvian; Lettish				
1181	Frisian	1345	Malagasy			1703	Not specified

SECTION 2
DISASSEMBLY

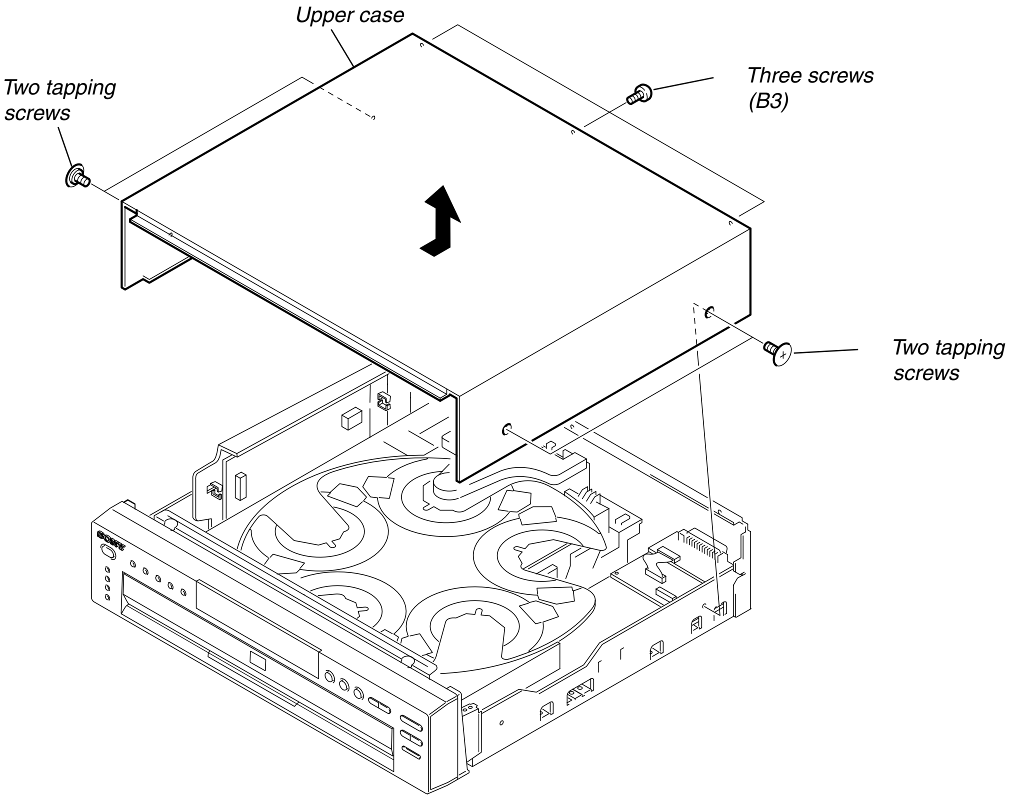
2-1. DISASSEMBLY

- This set can be disassembled in the order shown below.

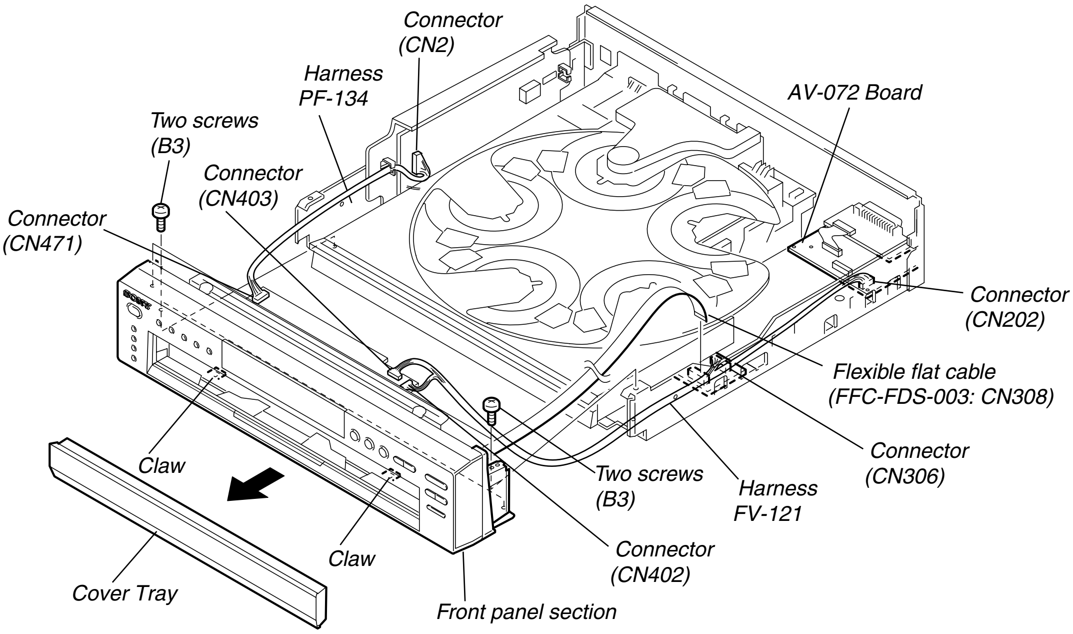

Set
Upper case (Page 2-1)
Front panel section (Page 2-2)
Rear panel section (Page 2-2)
MB-108 board (Page 2-3)
DV-034 board (Page 2-3)
Power block (Page 2-6)
Table ass'y (Page 2-4)
AV-072 board (Page 2-4)
ER-14 board (AEP, UK) (Page 2-4)
Loading motor ass'y (M901) (Page 2-5)
Optical pick-up (Page 2-5)
IF-099, FR-197 boards (Page 2-6)

NOTE: Follow the disassembly procedure in the numerical order given.

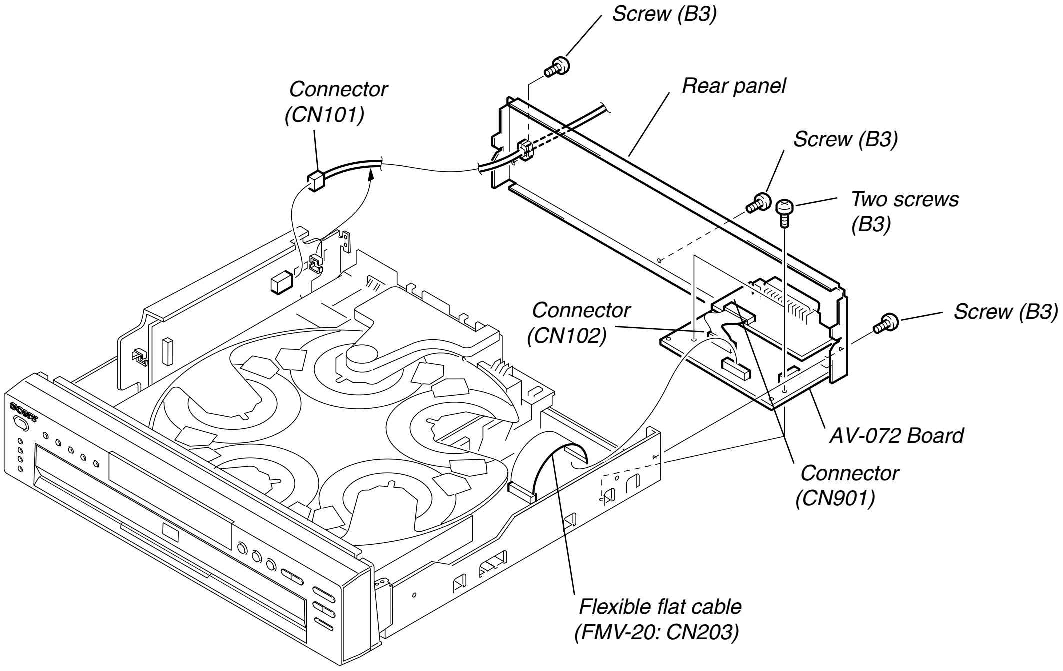
2-2. UPPER CASE



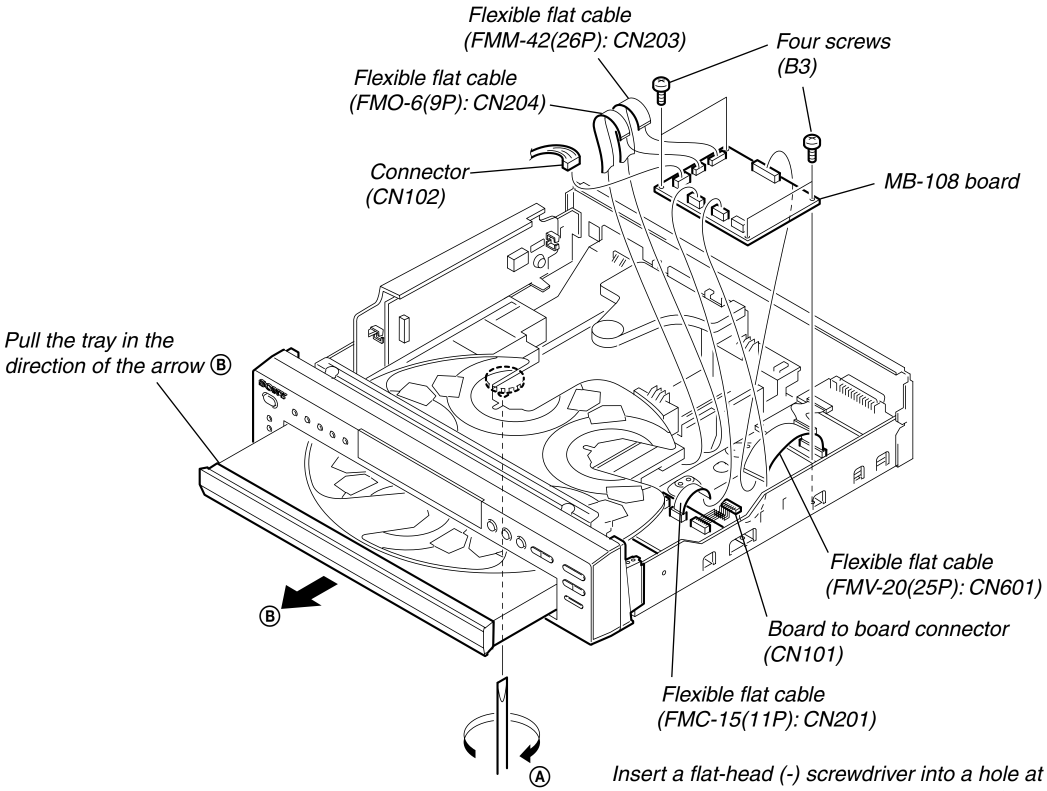
2-3. FRONT PANEL SECTION



2-4. REAR PANEL

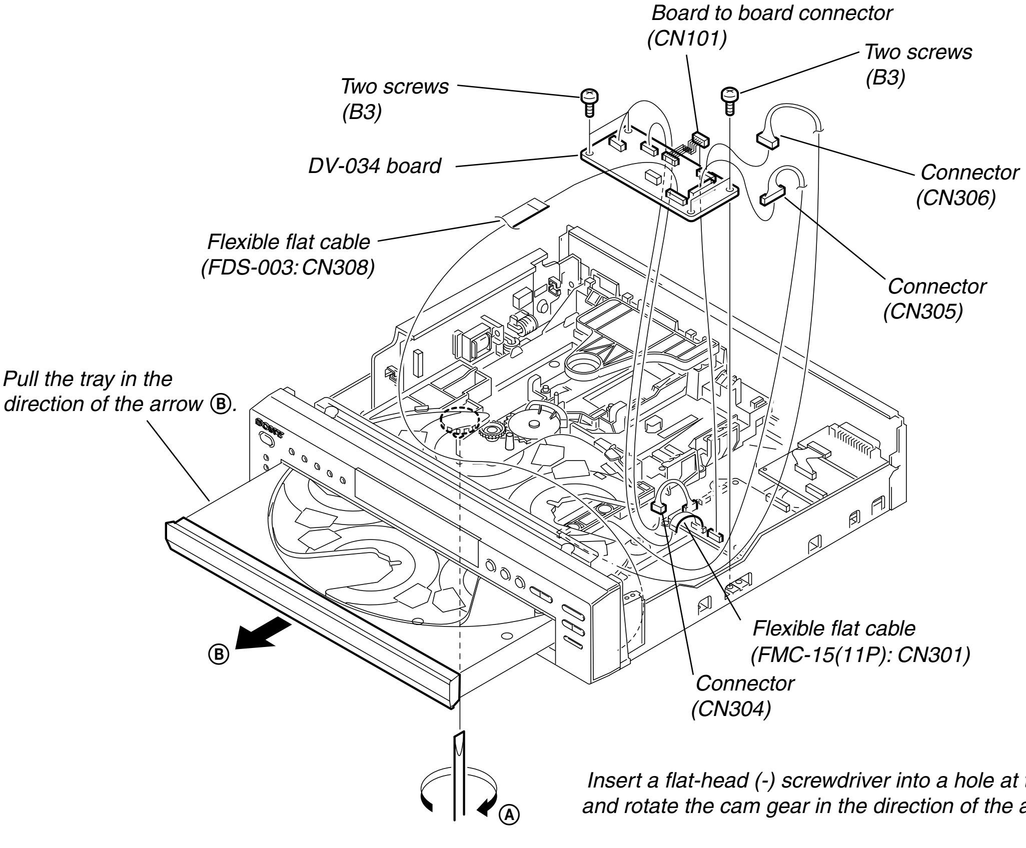


2-5. MB-108 BOARD



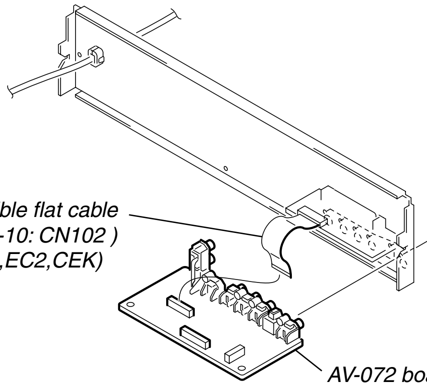
Insert a flat-head (-) screwdriver into a hole at the bottom, and rotate the cam gear in the direction of the arrow Ⓐ.

2-6. DV-034 BOARD



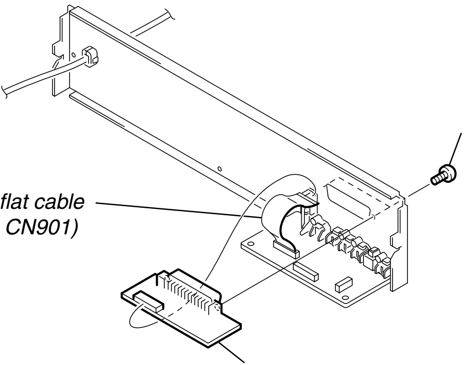
Insert a flat-head (-) screwdriver into a hole at the bottom, and rotate the cam gear in the direction of the arrow Ⓐ.

2-7. AV-072 BOARD

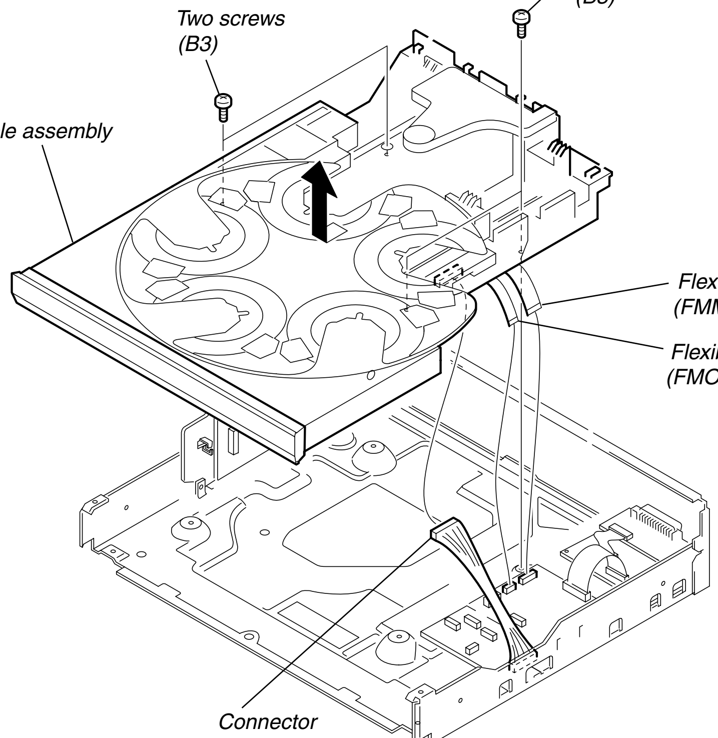


	Screw Qty
USA/Canada	5
PX3	5
ECI & CEK	4
MX2 & E32	5
SP6	6
AU2	6

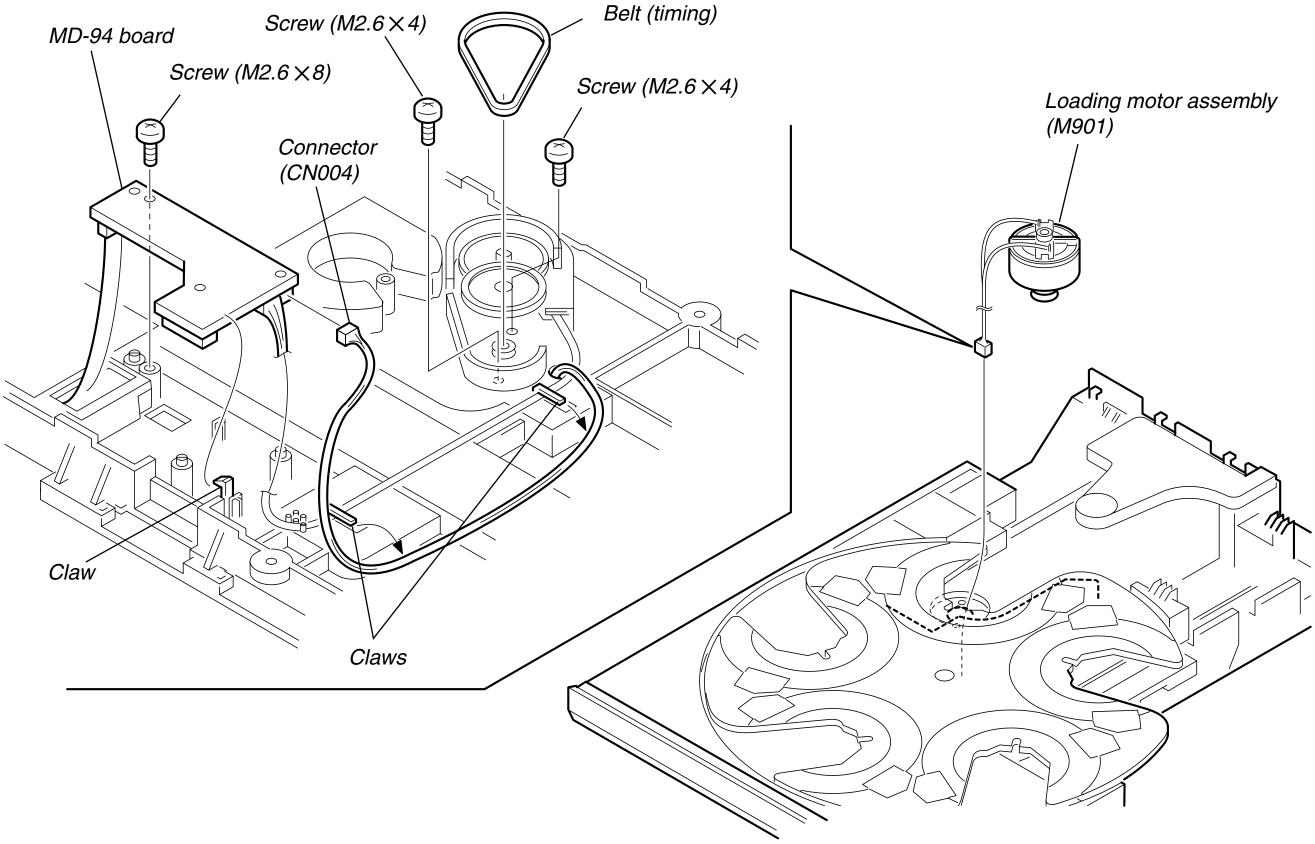
2-8. ER-14 BOARD (AEP, UK)



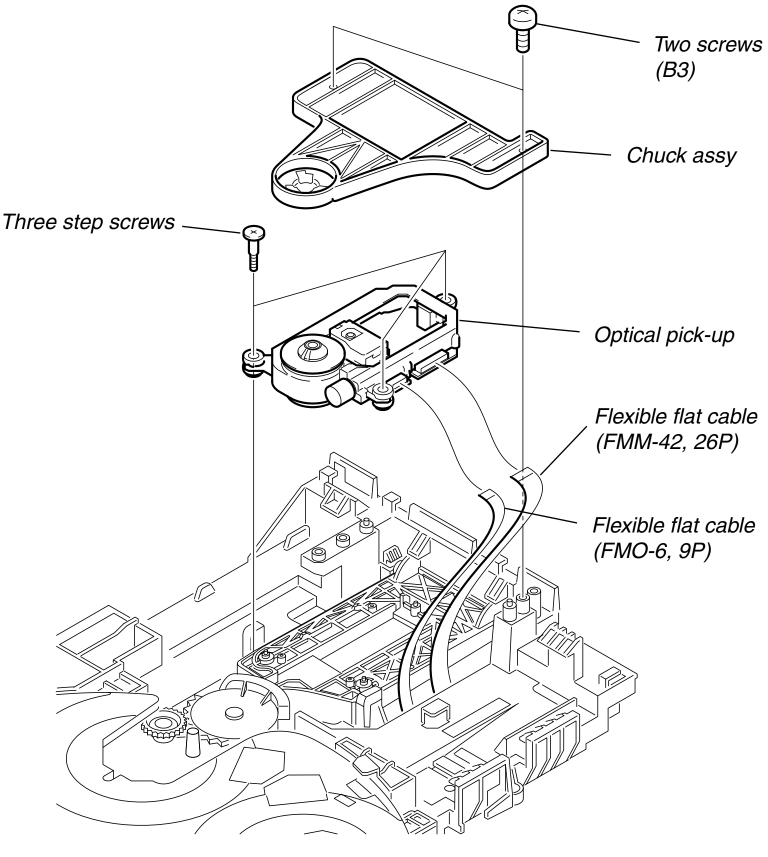
2-9. TABLE ASS'Y



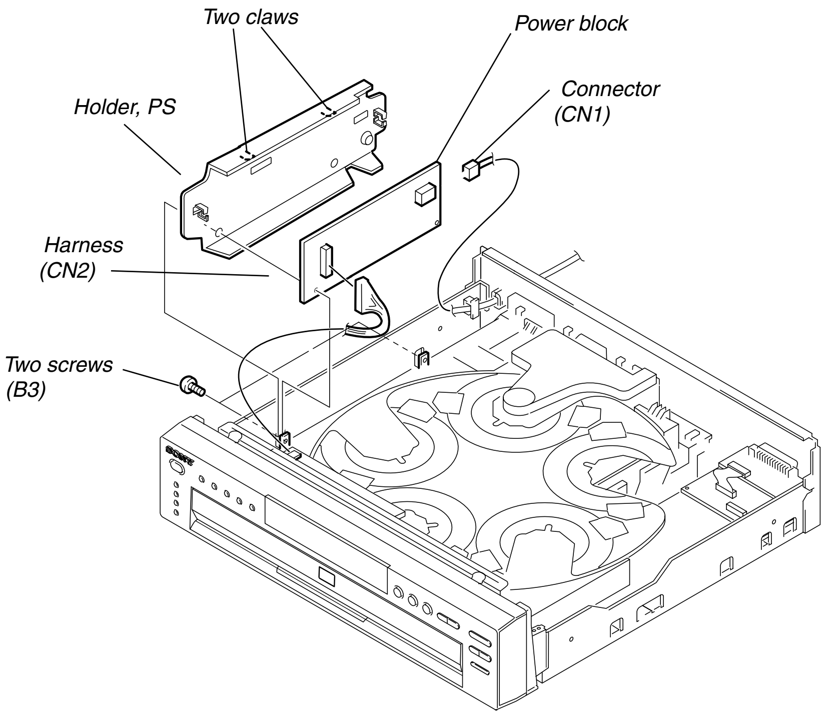
2-10. LOADING MOTOR ASS'Y



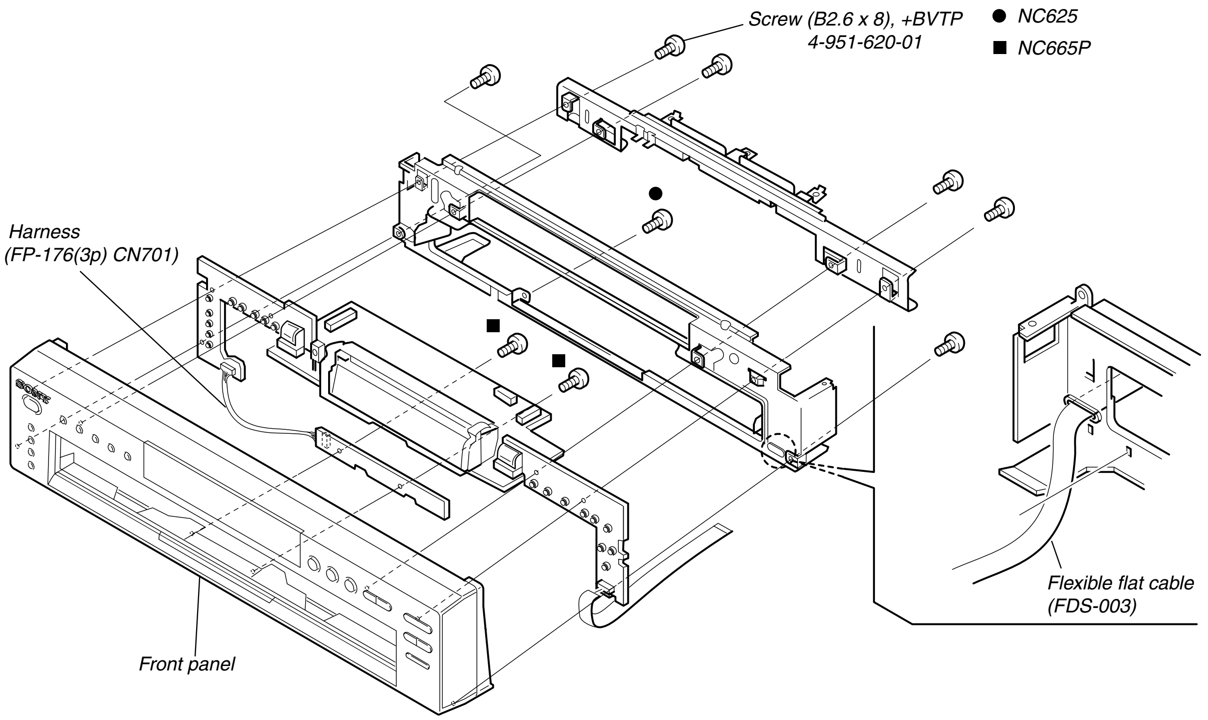
2-11. OPTICAL PICK-UP



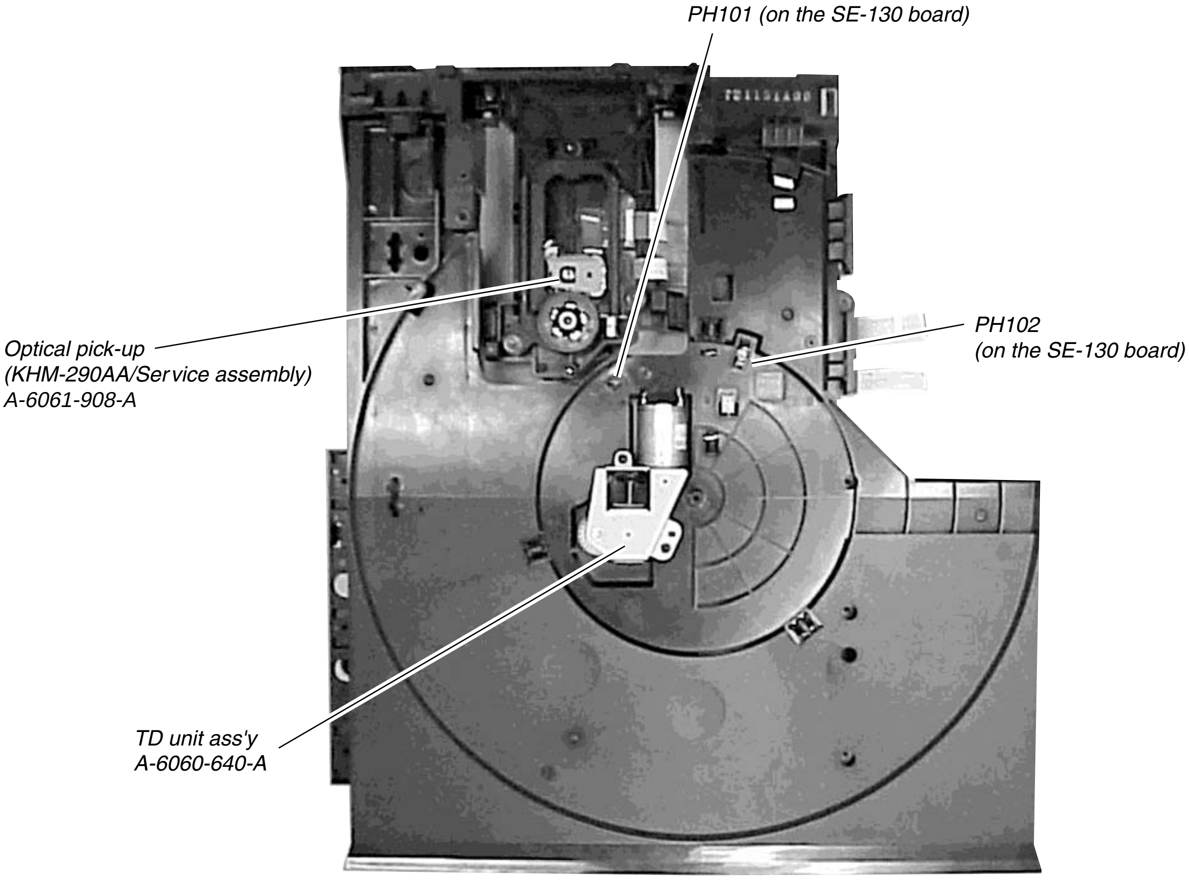
2-12. POWER BLOCK

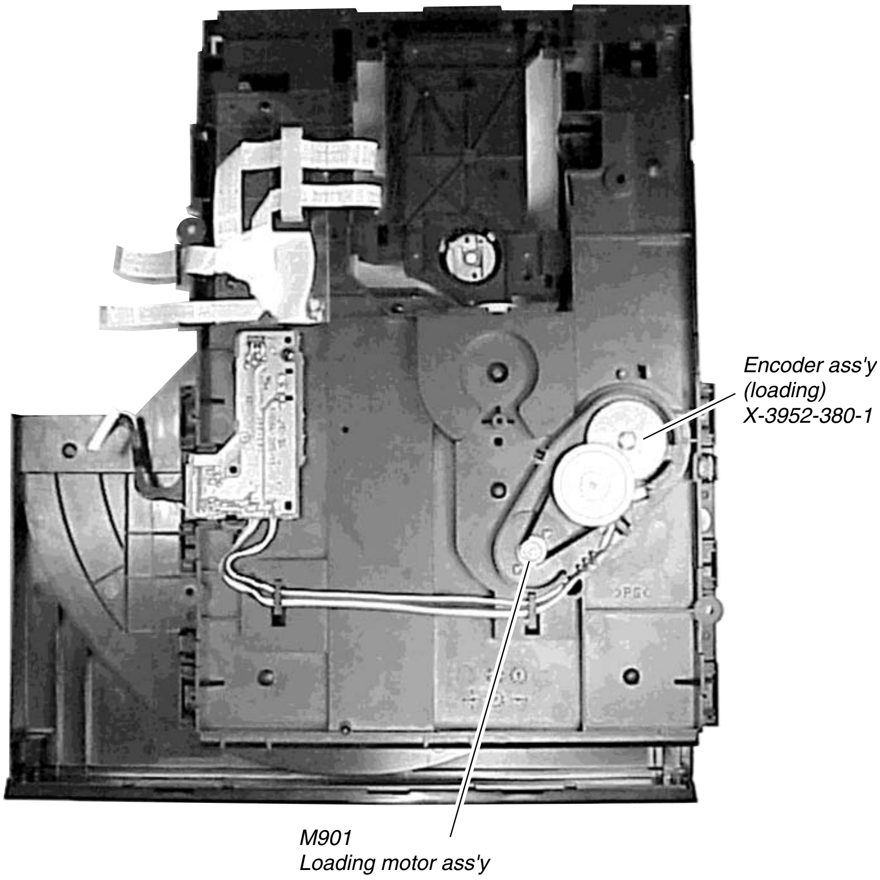


2-13. IF-099 AND FR-197 BOARDS

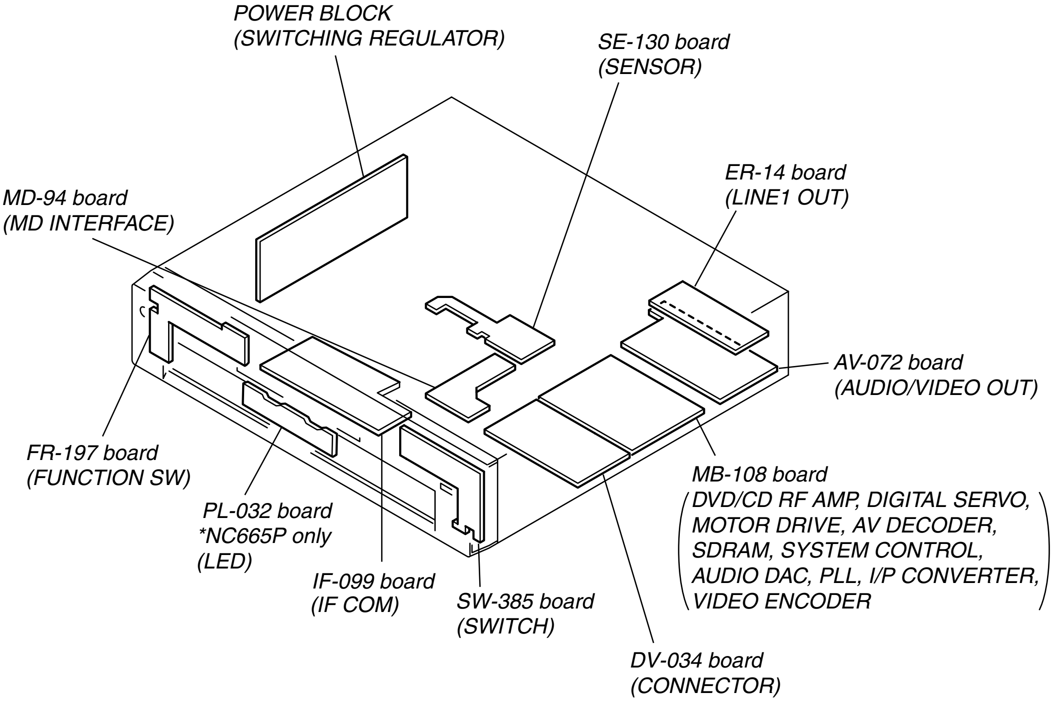


2-14. INTERNAL VIEWS



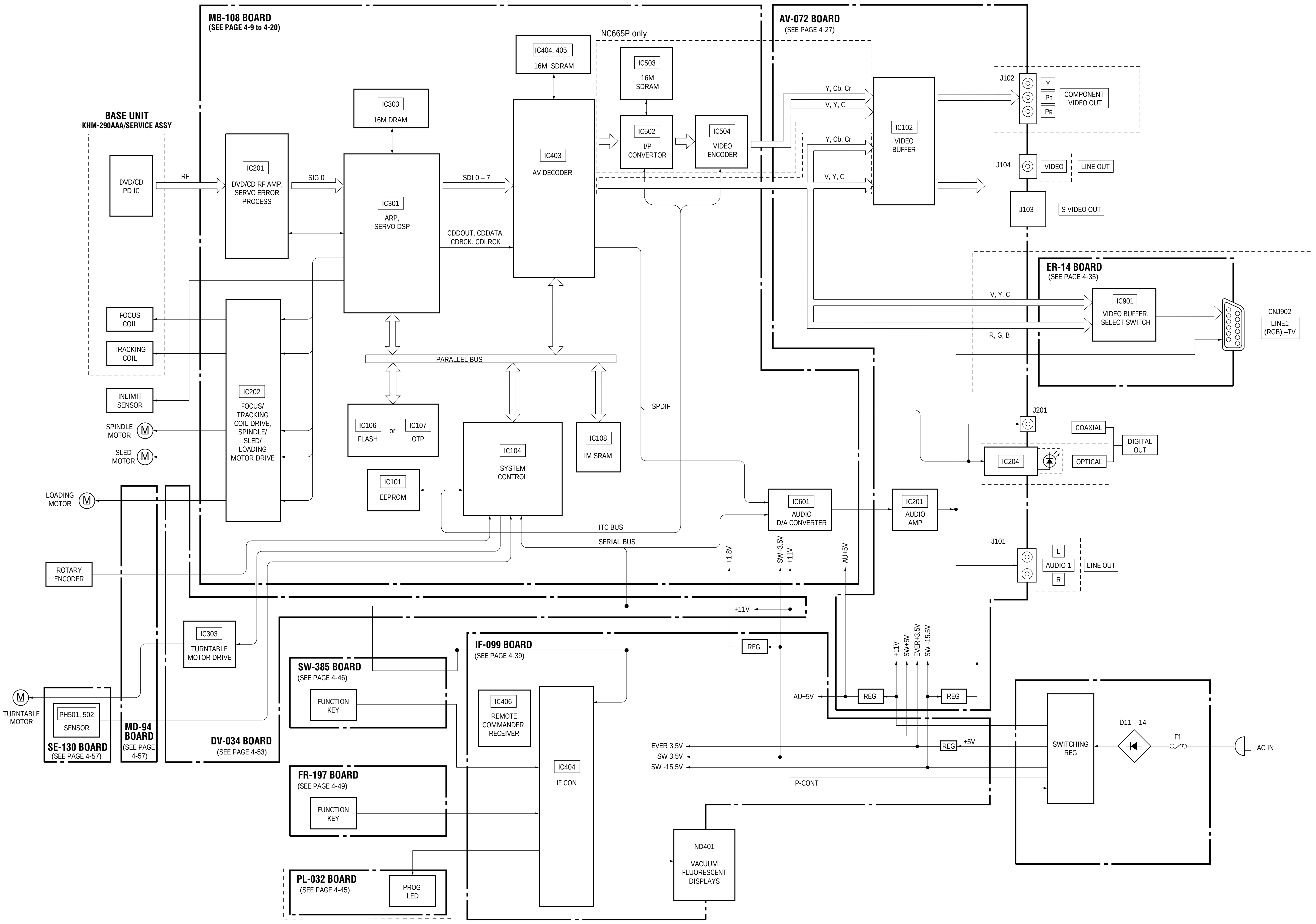


2-15. CIRCUIT BOARDS LOCATION

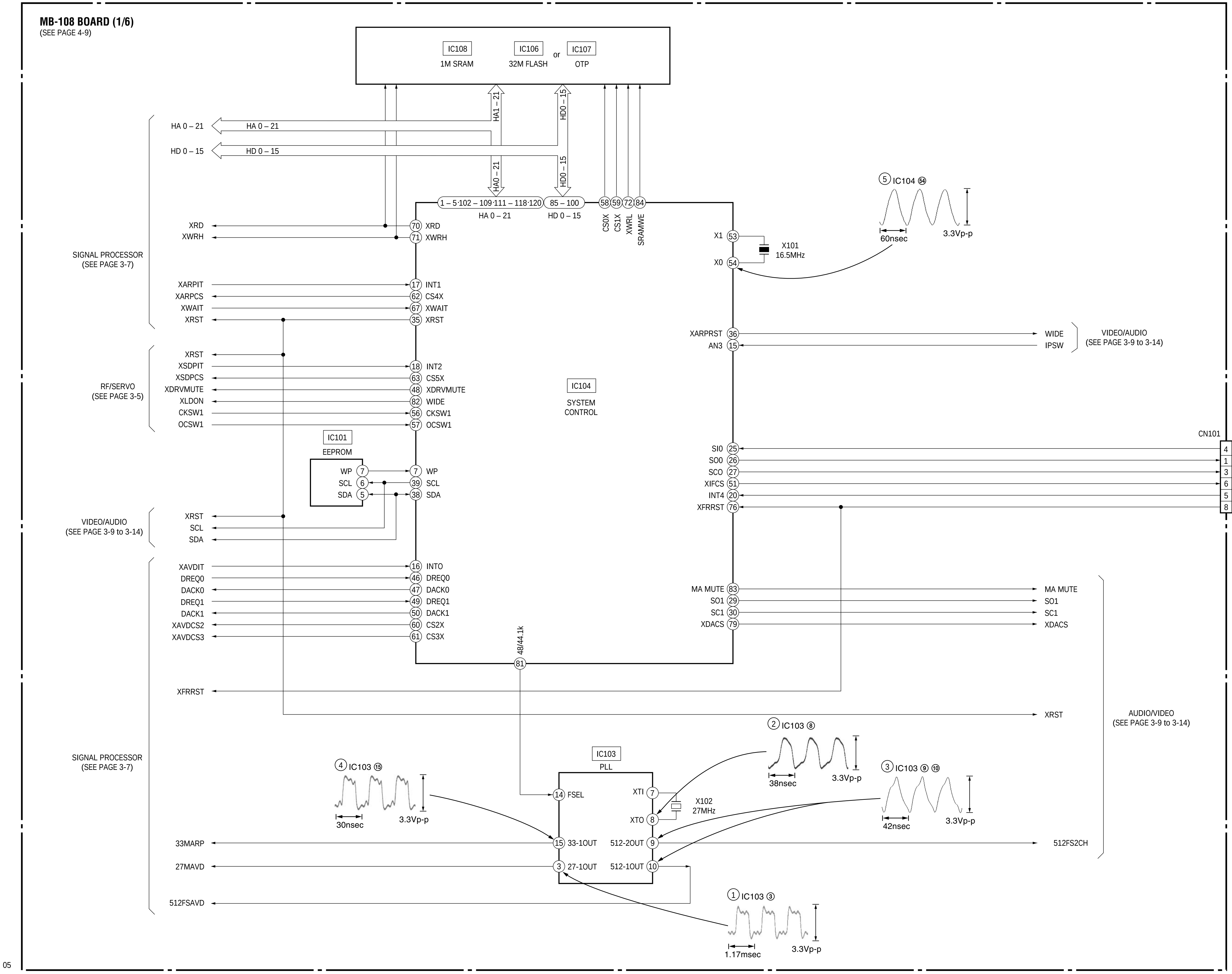


SECTION 3
BLOCK DIAGRAMS

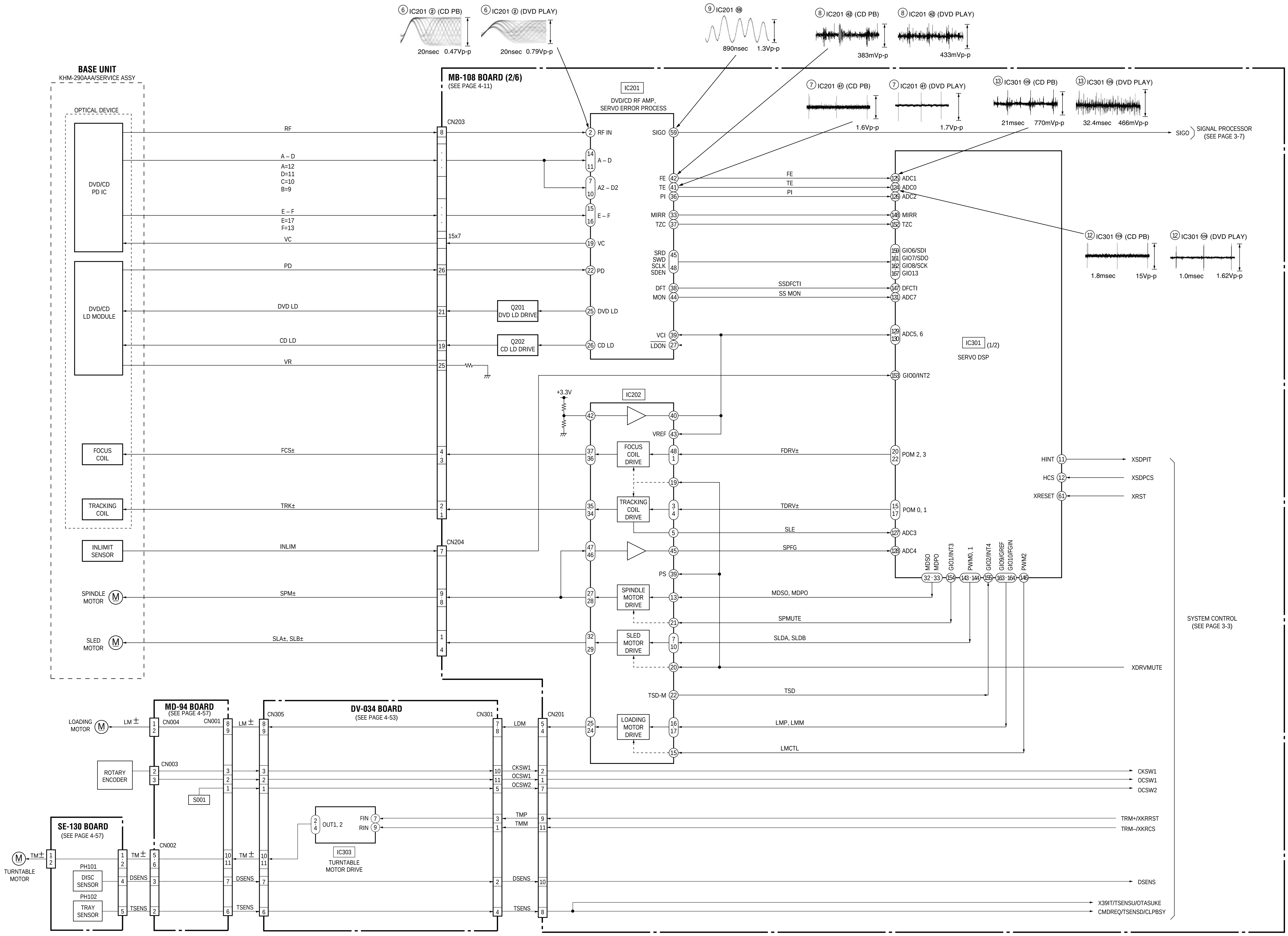
3-1. OVERALL BLOCK DIAGRAM



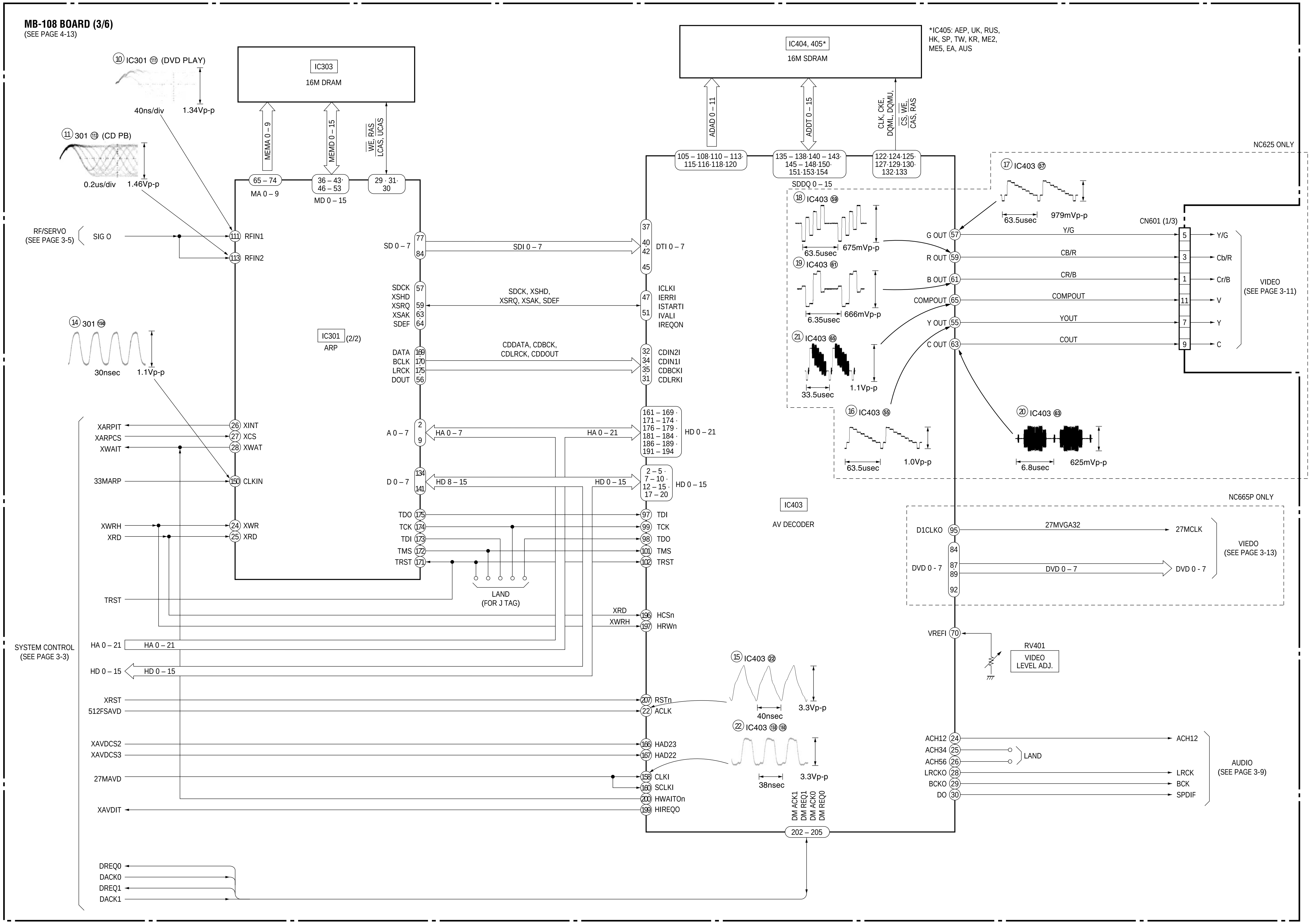
3-2. SYSTEM CONTROL BLOCK DIAGRAM



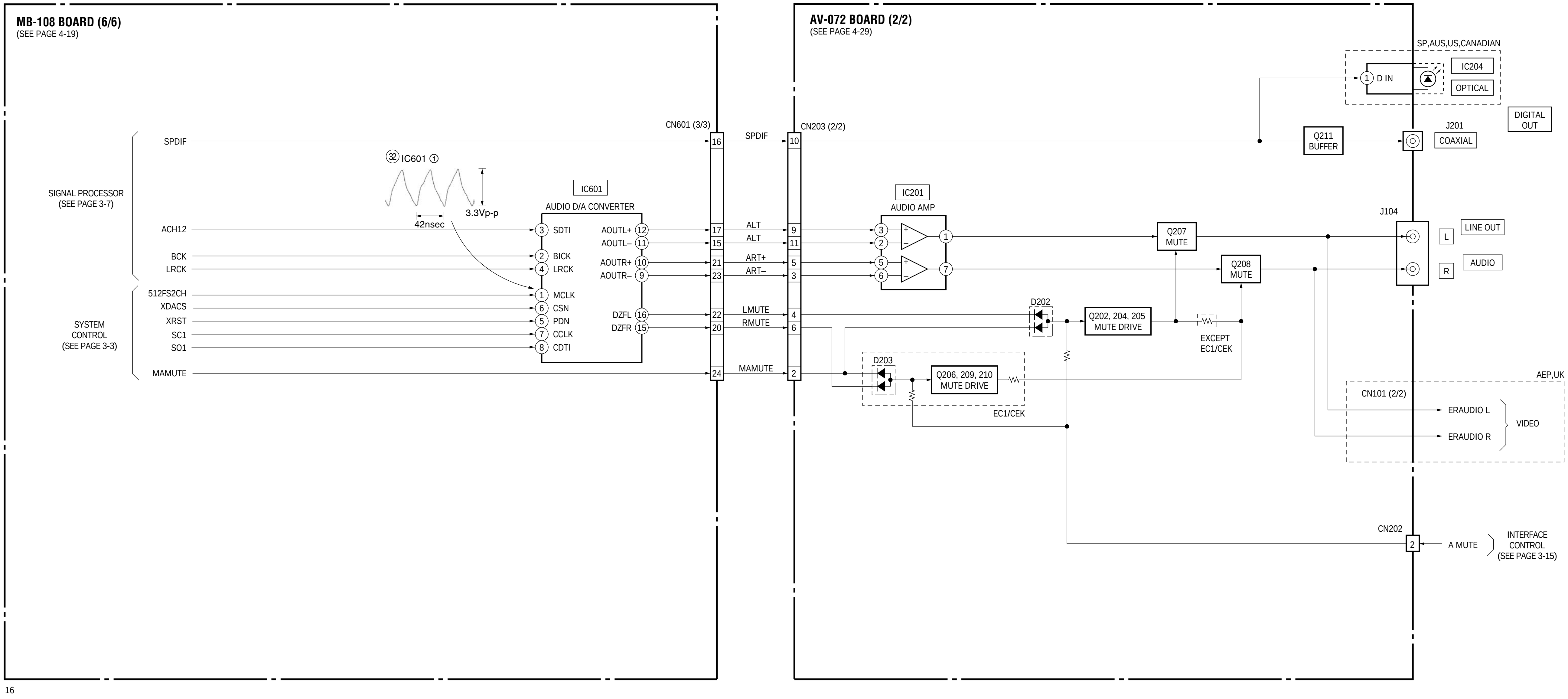
3-3. RF/SERVO BLOCK DIAGRAM



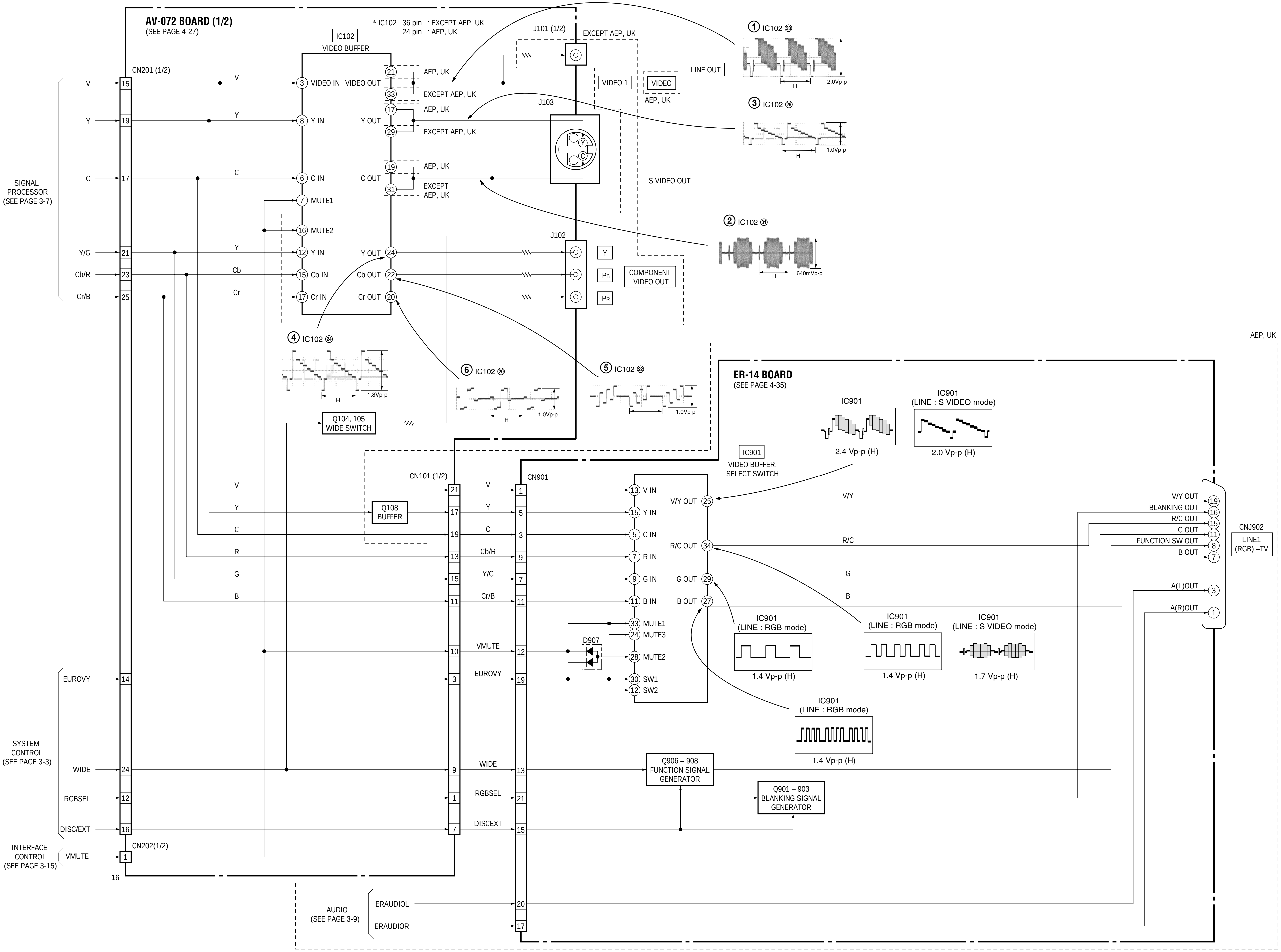
3-4. SIGNAL PROCESSOR BLOCK DIAGRAM



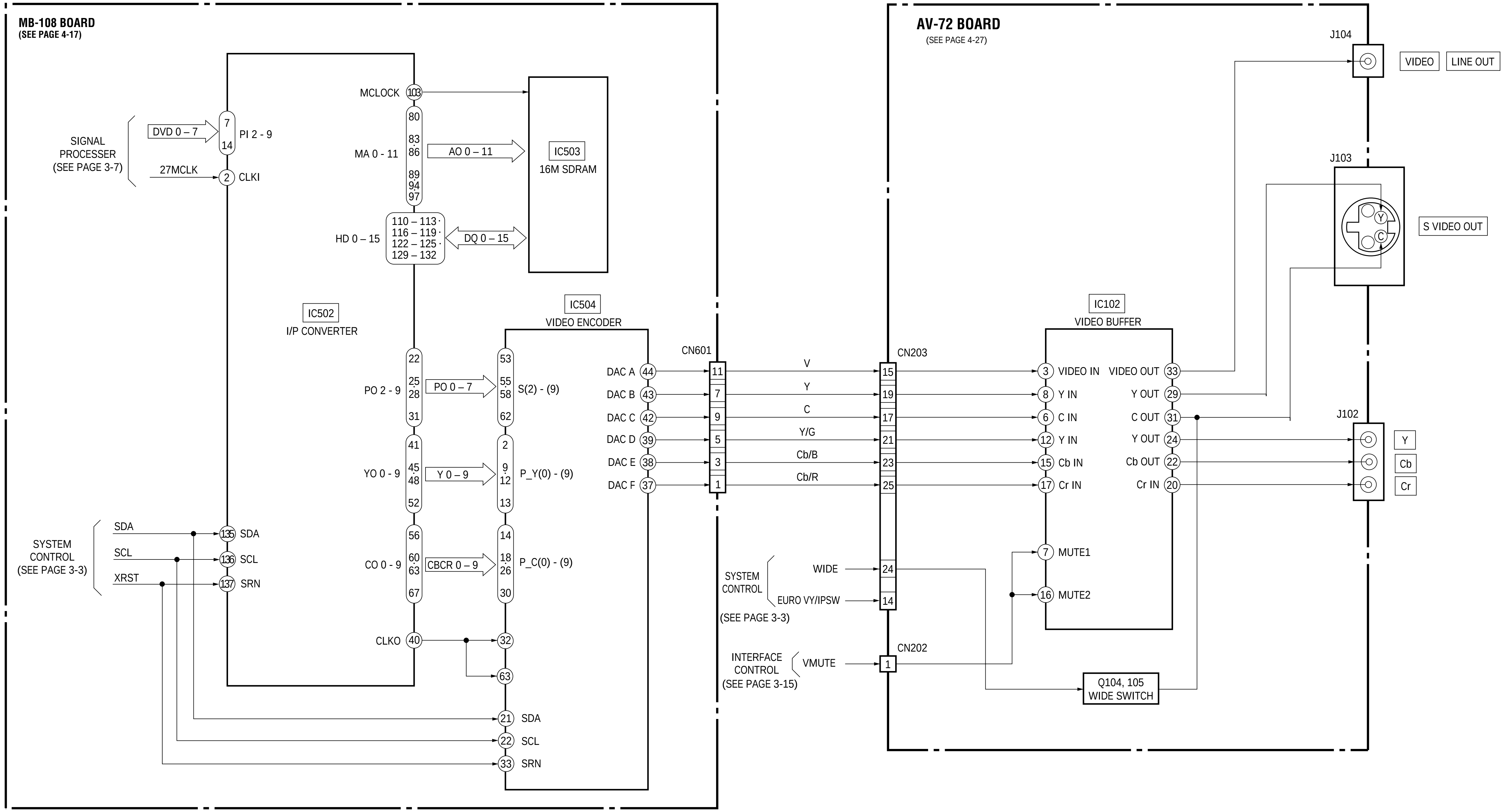
3-5. AUDIO BLOCK DIAGRAM



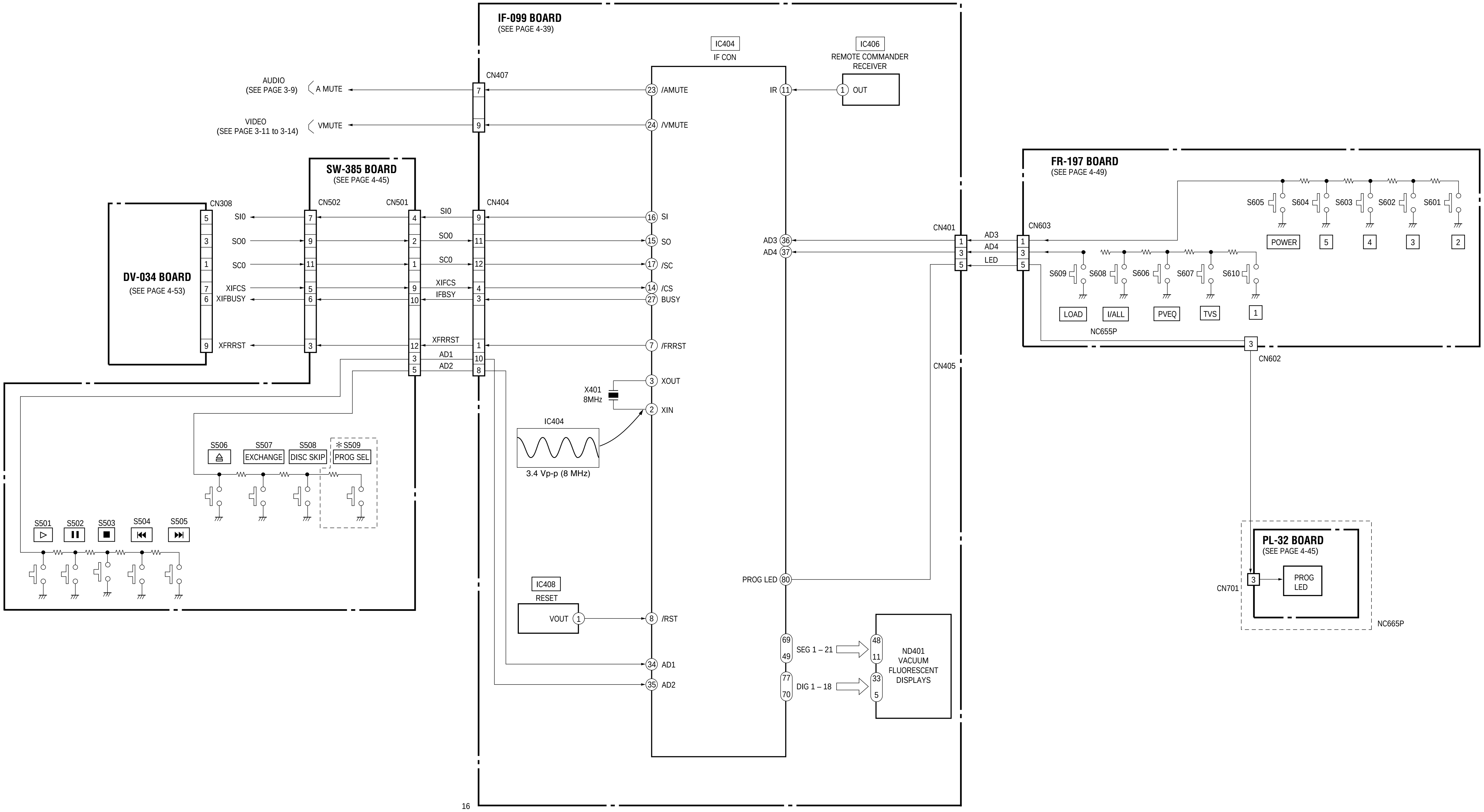
3-6. VIDEO BLOCK DIAGRAM (NC625)



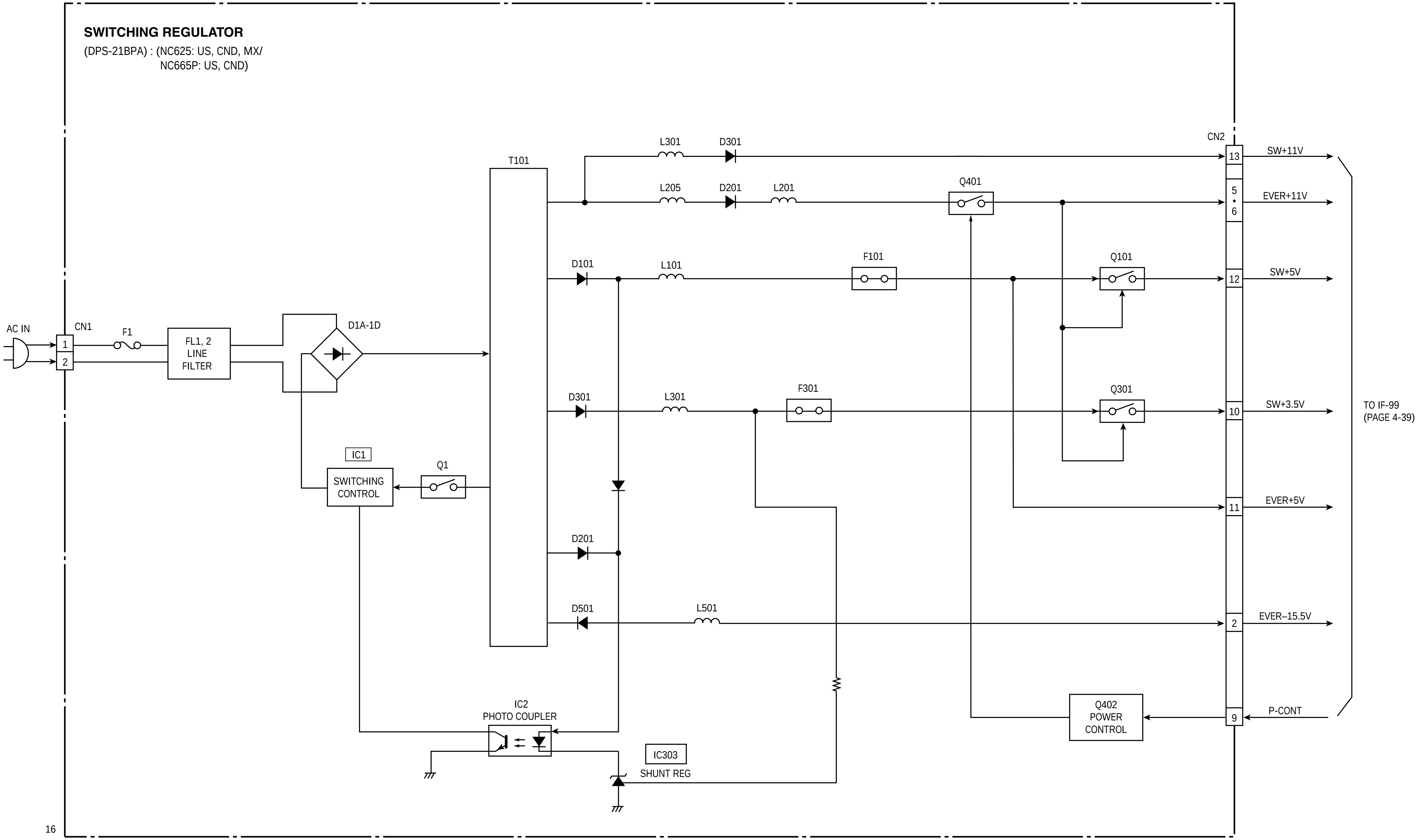
3-7. VIDEO BLOCK DIAGRAM (NC665P)



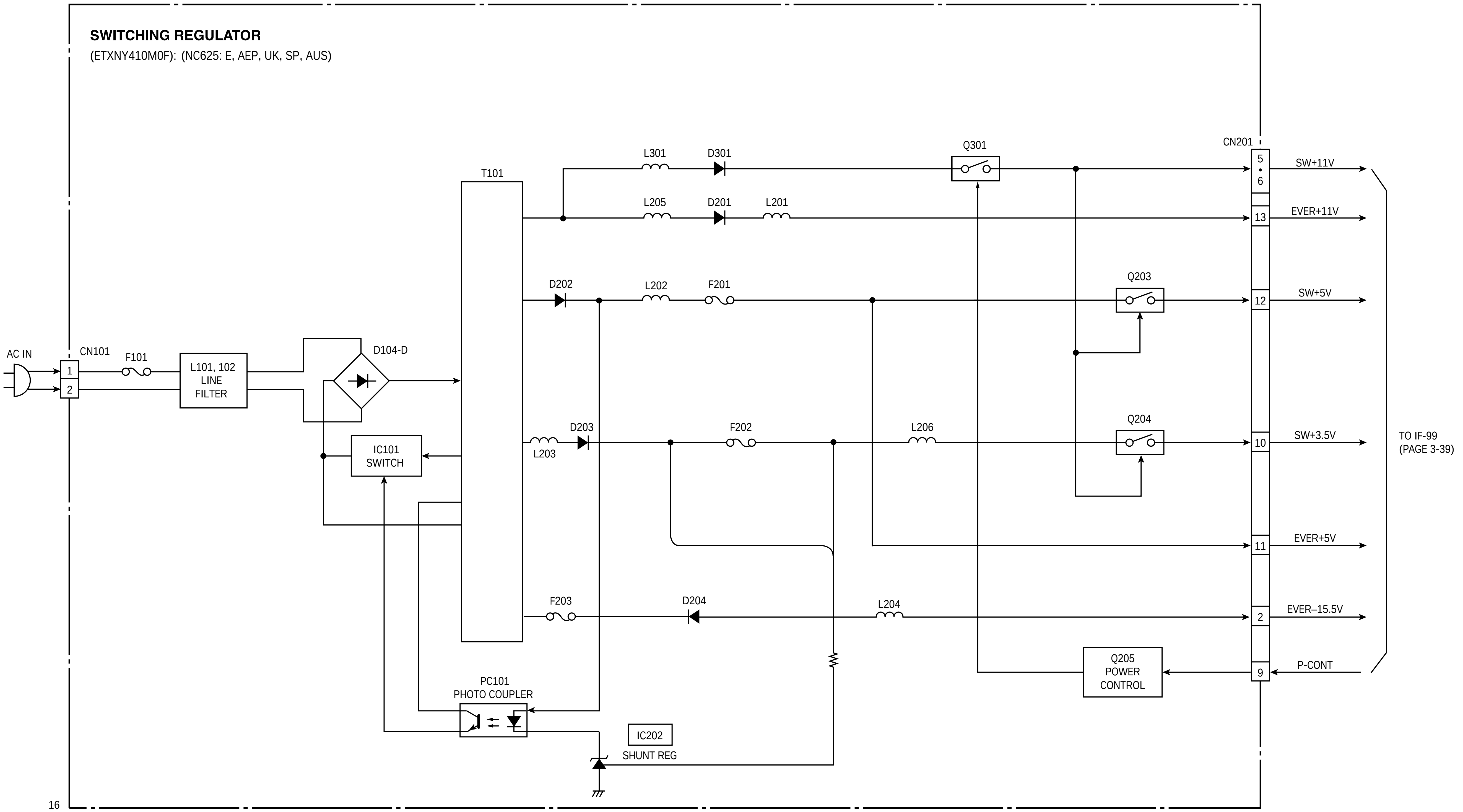
3-8. INTERFACE CONTROL BLOCK DIAGRAM



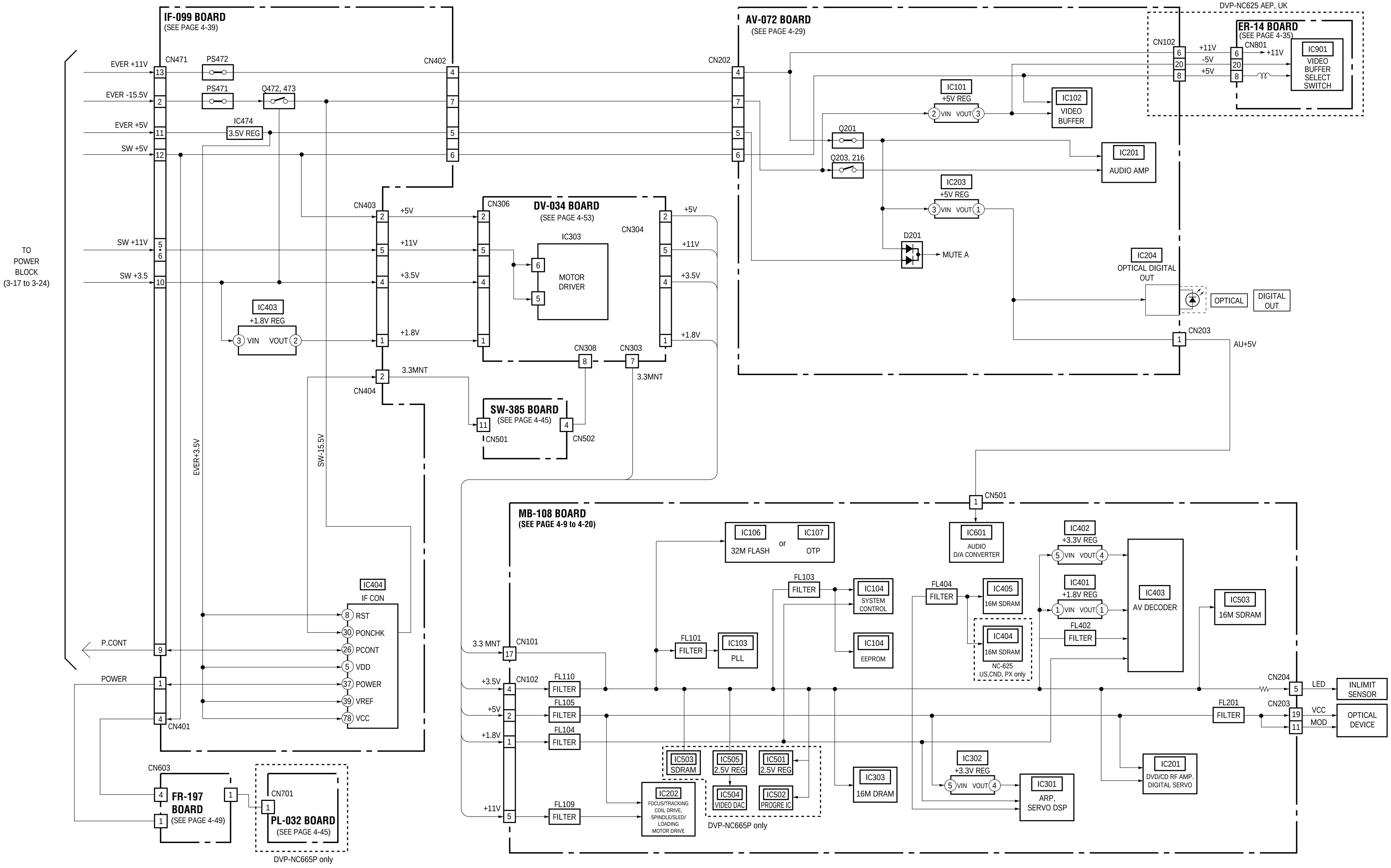
3-9. POWER BLOCK DIAGRAM (1/3)



3-10. POWER BLOCK DIAGRAM (2/3)

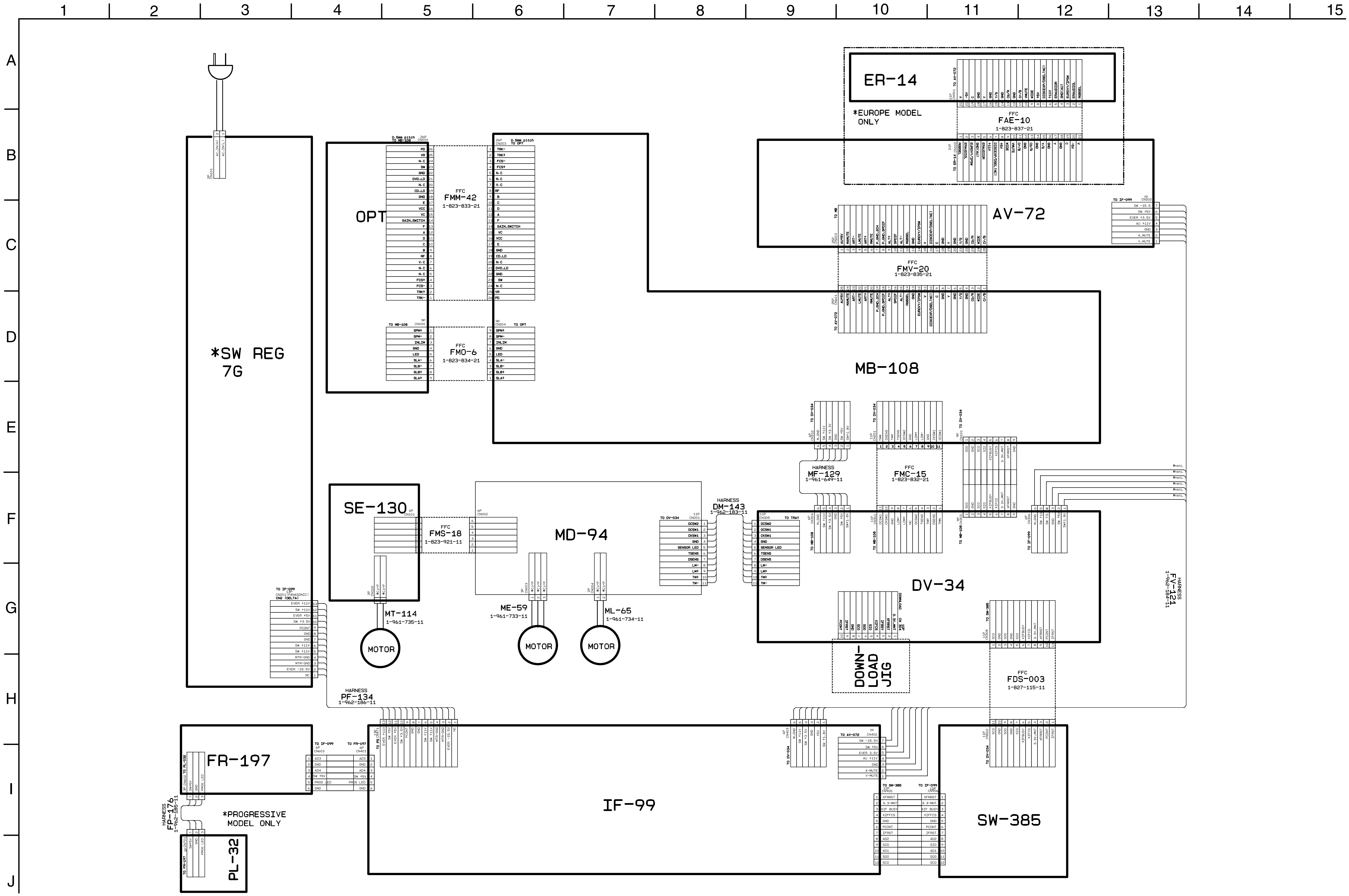


3-11. POWER BLOCK DIAGRAM (3/3)



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR WIRING BOARDS AND SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For printed wiring boards)

- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ▭ : Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

- Abbreviation

US	: USA model
CND	: Canadian model
PX	: PX model
E	: Latin model
MX	: Mexico model
AEP	: AEP model
UK	: UK model
SP	: Singapore model
AUS	: Australia model

(For schematic diagrams)

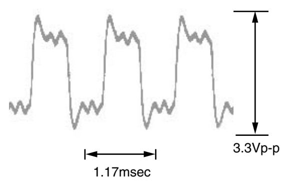
- All capacitors are in µF unless otherwise noted. pF : µµF. 50V or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4 W (Chip resistors : 1 /10 W) unless otherwise specified.
  kΩ=1000Ω, MΩ=1000kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- —▭— : non flammable resistor
- —▭— : fusible resistor
- ▭ : panel designation
- △ : internal component.
- ▭ : adjustment for repair.
- B + : B+ Line
- B – : B– Line
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signals on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10MW).
- Voltage variations may be noted due to normal production tolerances.

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

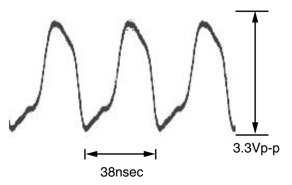
When indicating parts by reference number, please include the board name.

MB-108 BOARD

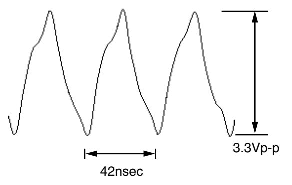
① IC103 ③



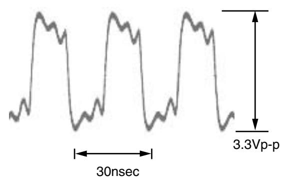
② IC103 ⑧



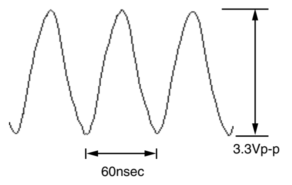
③ IC103 ⑨ ⑩



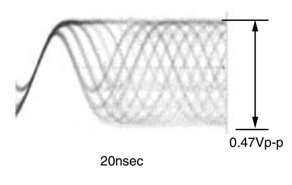
④ IC103 ⑮



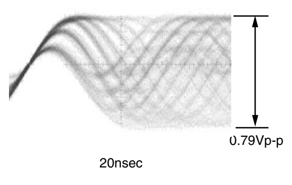
⑤ IC104 (54)



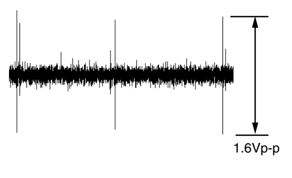
⑥ IC201 ② (CD PB)



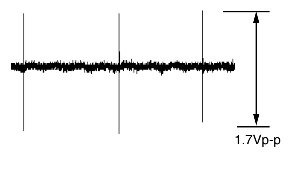
⑥ IC201 ② (DVD PLAY)



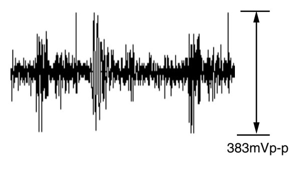
⑦ IC201 ㊶ (CD PB)



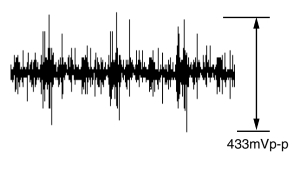
⑦ IC201 ㊶ (DVD PLAY)



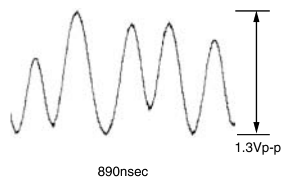
⑧ IC201 ㊷ (CD PB)



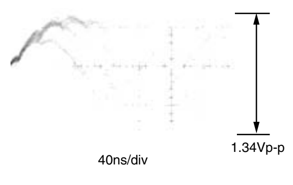
⑧ IC201 ㊷ (DVD PLAY)



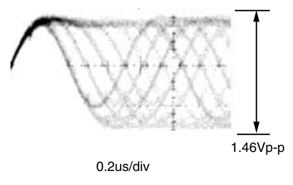
⑨ IC201 (59)



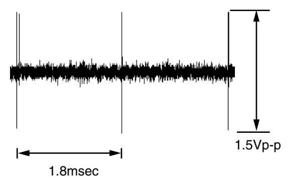
⑩ IC301 (111) (DVD PLAY)



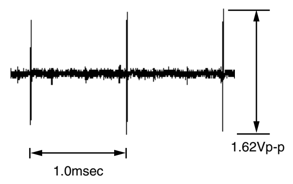
⑪ IC301 (113) (CD PB)



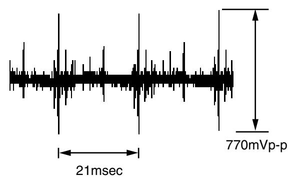
⑫ IC301 (124) (CD PB)



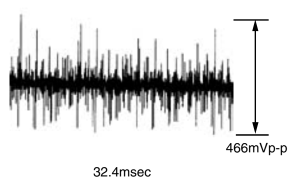
⑫ IC301 (124) (DVD PLAY)



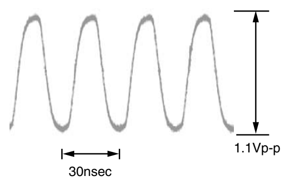
⑬ IC301 (125) (CD PB)



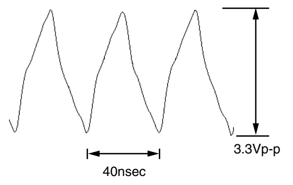
⑬ IC301 (125) (DVD PLAY)



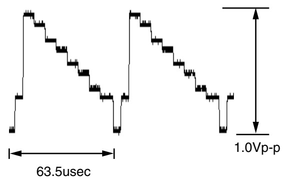
⑭ IC301 (150)



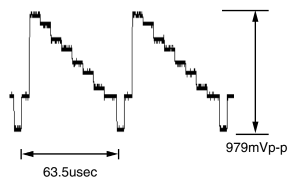
⑮ IC403 ㉒



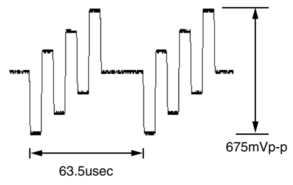
⑯ IC403 (55)



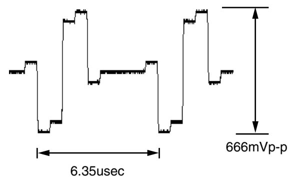
⑰ IC403 (57)



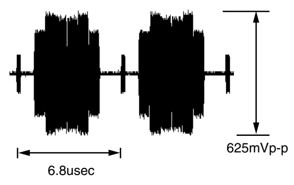
⑱ IC403 (59)



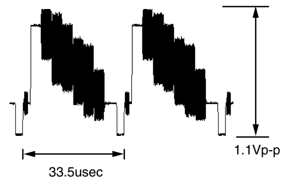
⑲ IC403 (61)



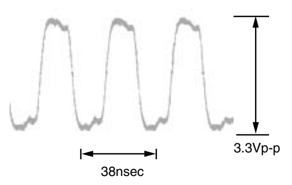
⑳ IC403 (63)



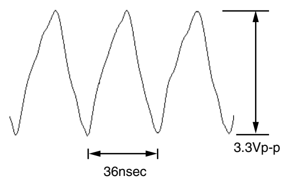
㉑ IC403 (65)



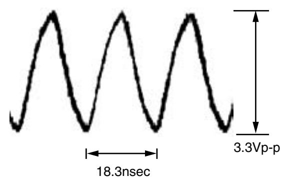
㉒ IC403 (158) (160)



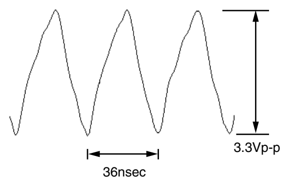
㉓ IC502 ㊵



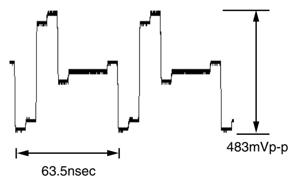
㉔ IC502 (103)



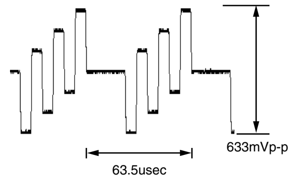
㉕ IC504 ㉜



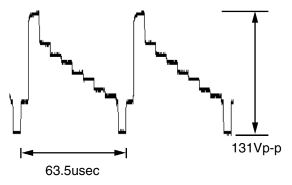
㉖ IC504 ㊲



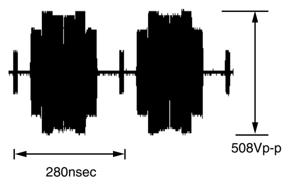
㉗ IC504 ㊳



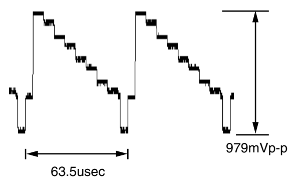
㉘ IC504 ㊴



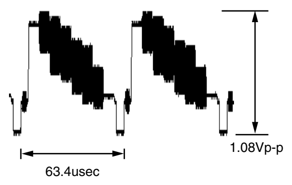
㉙ IC504 ㊷



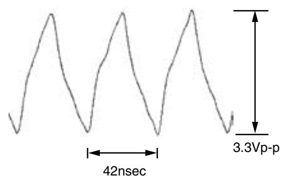
㉚ IC504 ㊸



㉛ IC504 ㊹

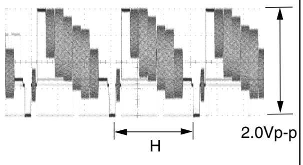


㉜ IC601 ①

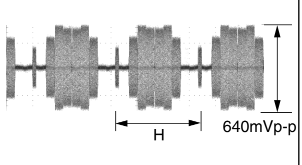


AV-072 BOARD

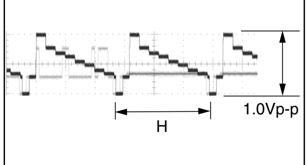
① IC102 ㉝



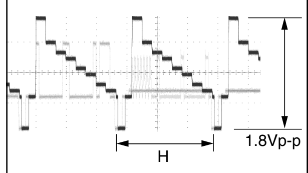
② IC102 ㉛



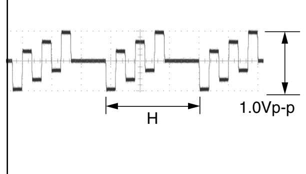
③ IC102 ㉙



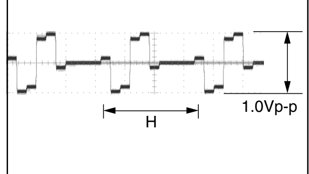
④ IC102 ㉔



⑤ IC102 ㉒

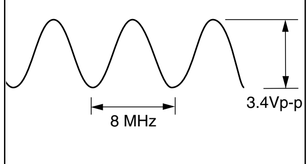


⑥ IC102 ⑳



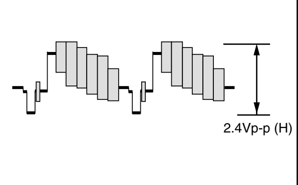
IF-099 BOARD

① IC404 ②

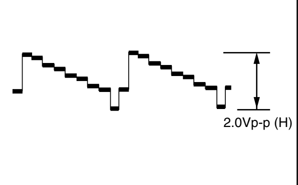


ER-14 BOARD

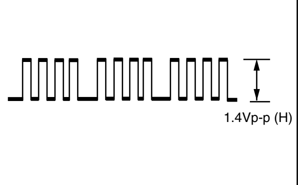
① IC901 ㉕



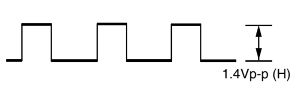
② IC901 ㉕ (LINE: S VIDEO mode)



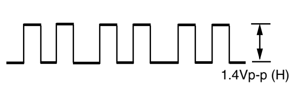
③ IC901 ㉗ (LINE: RGB mode)



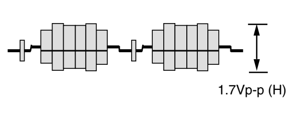
④ IC901 ㉙ (LINE: RGB mode)



⑤ IC901 ㉞ (LINE: RGB mode)



⑥ IC901 ㉞ (LINE: S VIDEO mode)

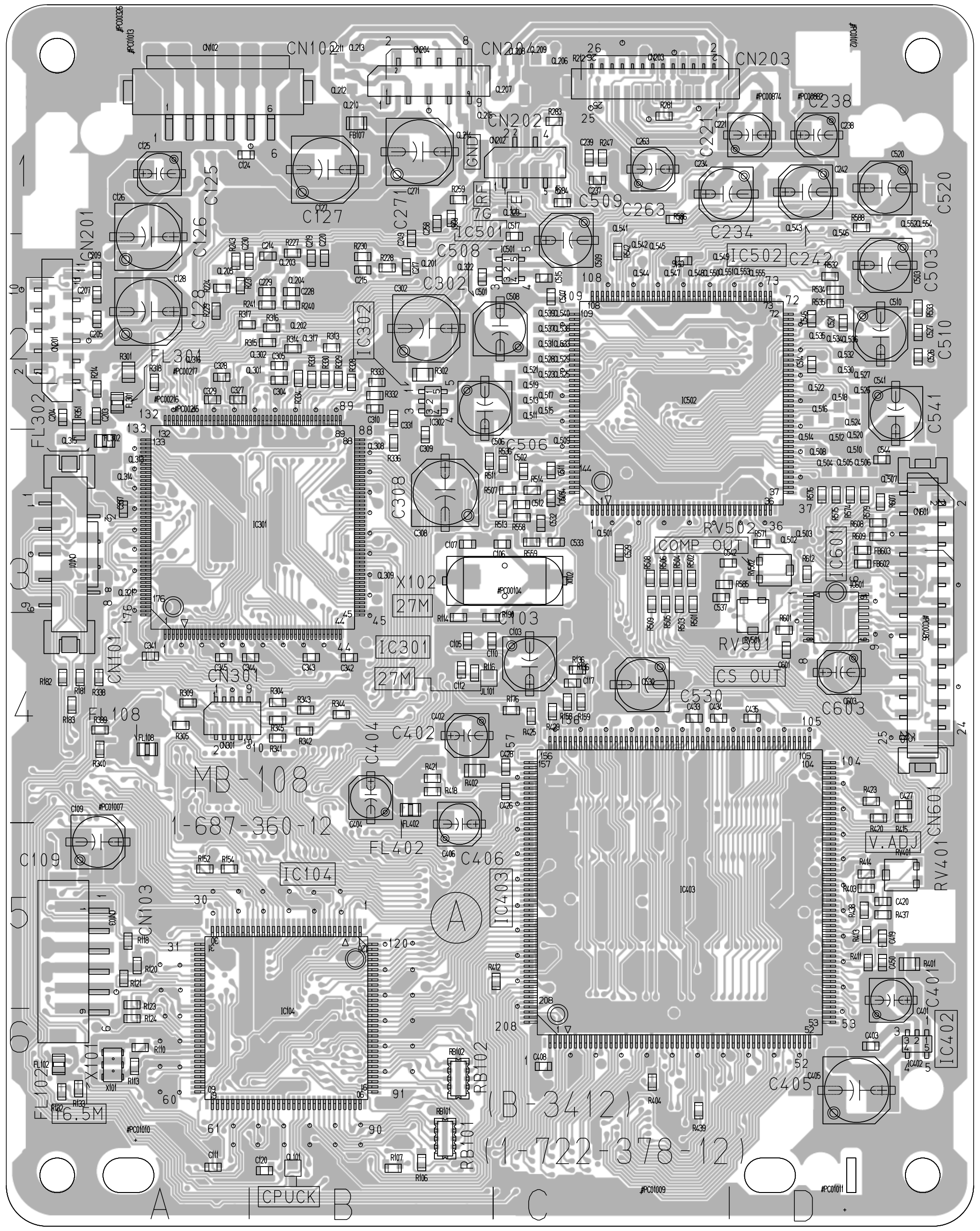


WAVEFORMS
MB-108/AV-072/IF-099/ER-14

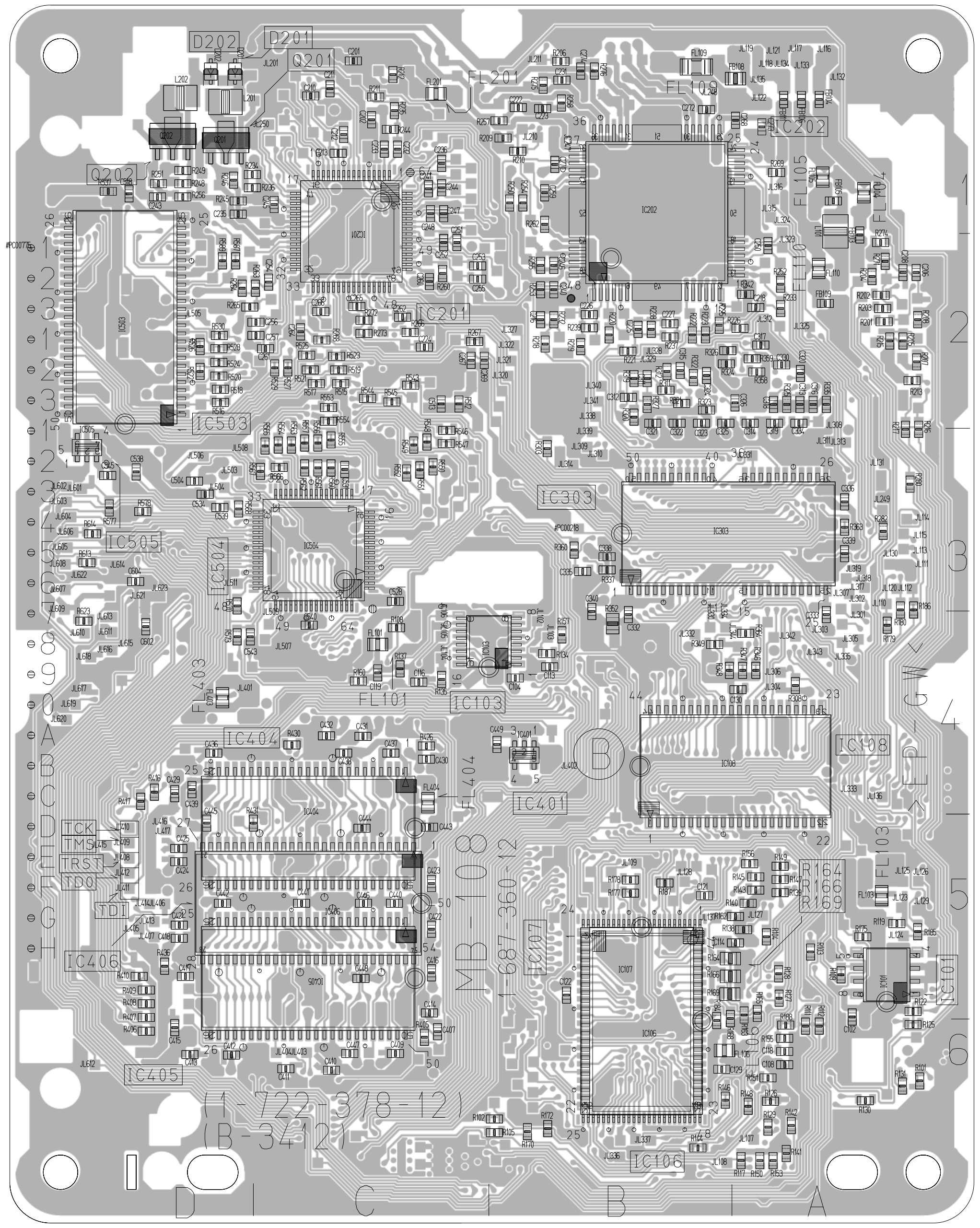
MB-108 (DVD/CD RF AMP,DIGITAL SERVO,MOTOR DRIVE,SERVO,AV DECODER,SD RAM, SYSTEM CONTROL,AUDIO DAC,PLL) PRINTED WIRING BOARD

- LF : Uses unleaded solder.

MB-108 BOARD (SIDE A)



MB-108 BOARD SIDE B

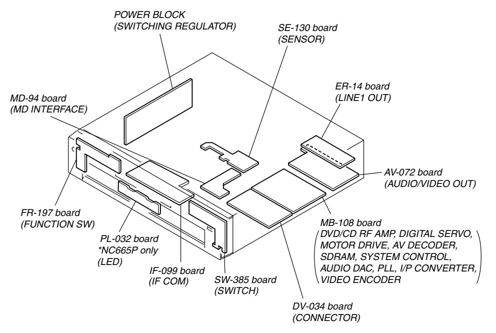


MB-108 BOARD

A SIDE		B SIDE					
IC104	B-6	IC101	A-5	IC401	B-4	Q201	D-1
IC301	B-3	IC103	C-4	IC404	C-4	Q202	D-1
IC302	B-2	IC106	B-6	IC405	C-5		
IC402	D-6	IC107	B-5	IC406	C-5	D201	D-1
IC403	C-5	IC108	B-4	IC503	D-2	D202	D-1
IC501	C-2	IC201	C-1	IC504	C-5		
IC502	C-5	IC202	B-1	IC505	D-3		
IC601	D-3	IC303	B-3				

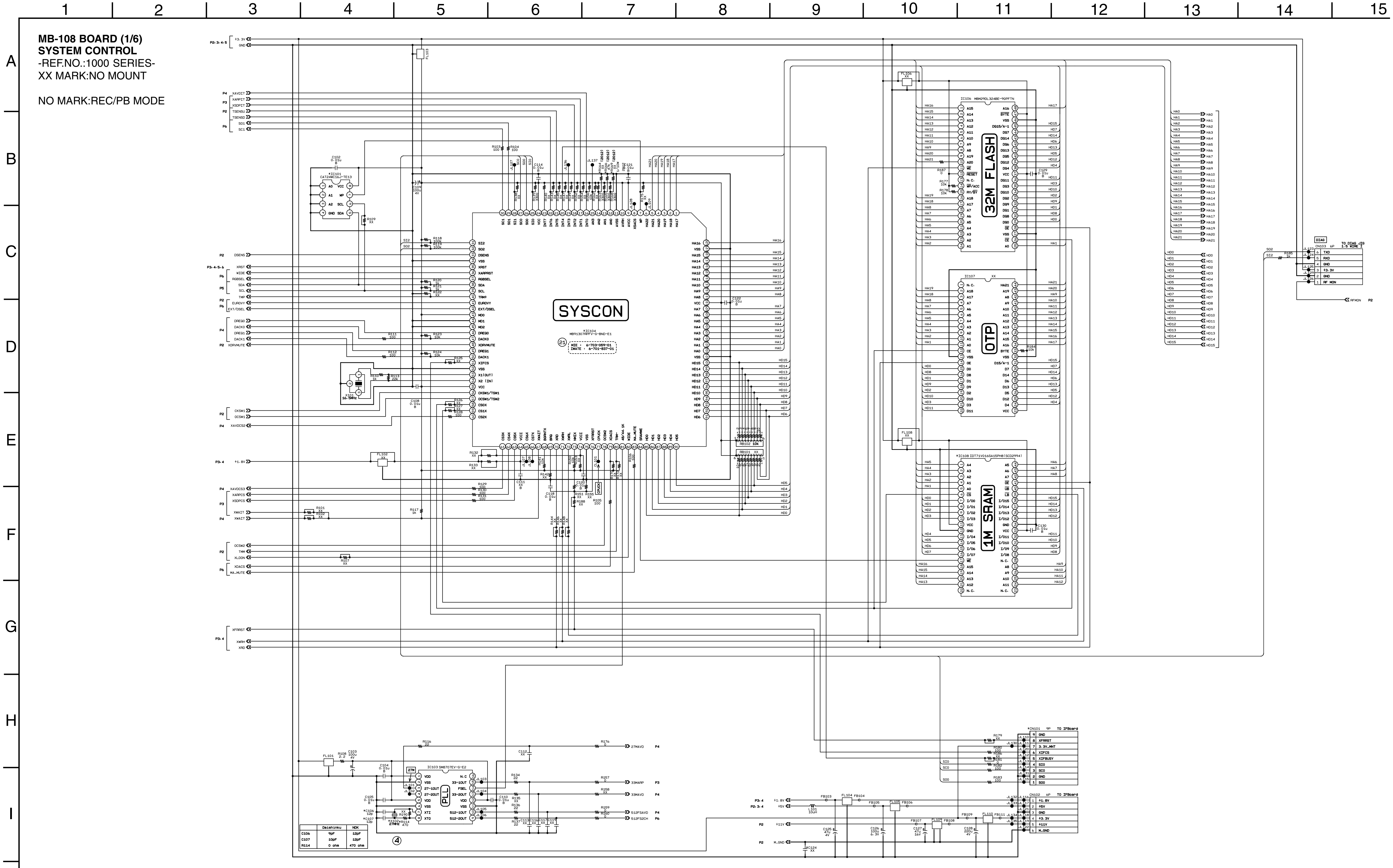
For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



For Schematic Diagram

- Refer to page 4-7 for printed wiring board of MB-108 board.
- Refer to page 4-5 for waveform

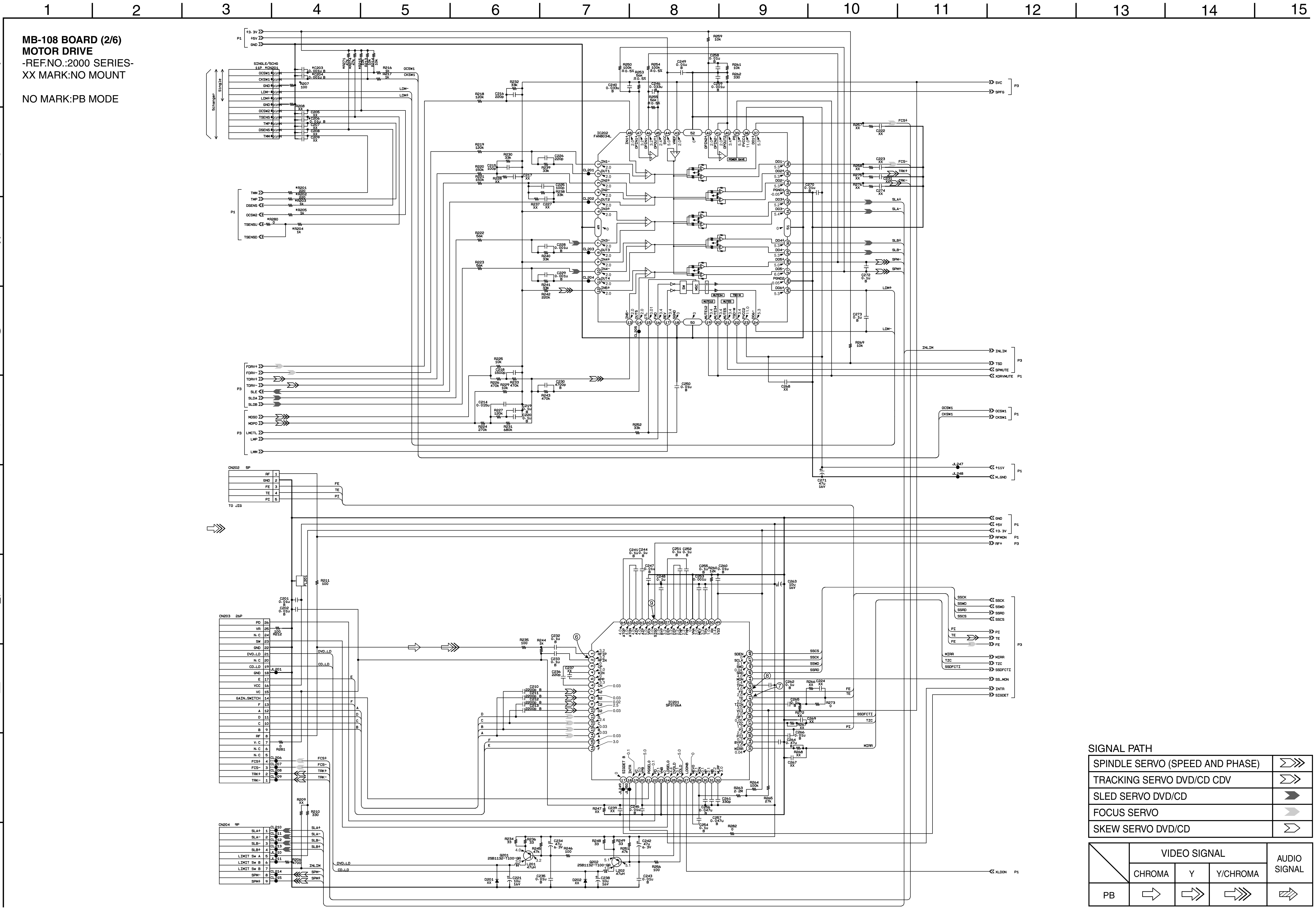


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SYSTEM CONTROL
MB-108 (1/6)

For Schematic Diagram

- Refer to page 4-7 for printed wiring board of MB-108 board.
- Refer to page 4-5 for waveform



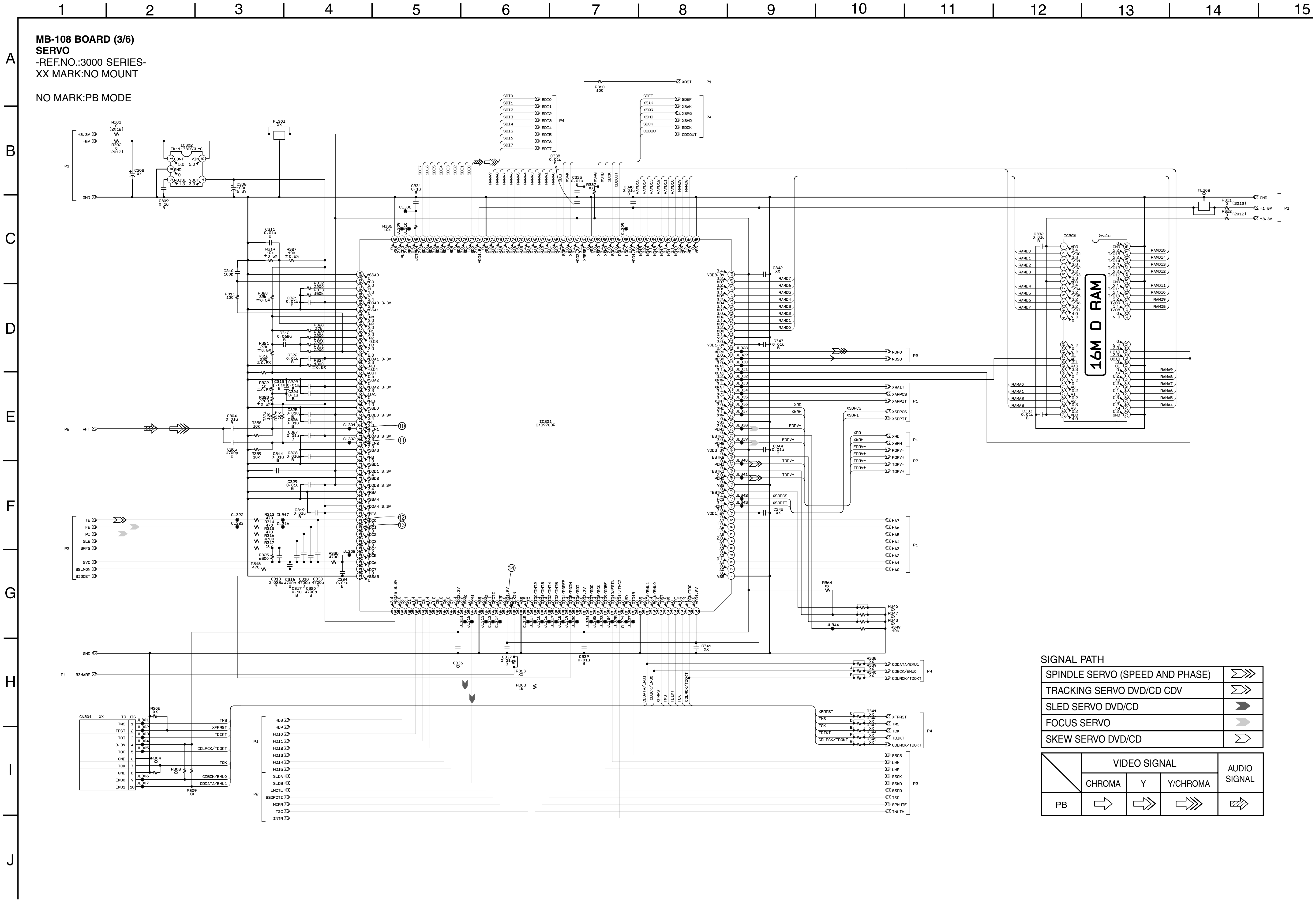
SIGNAL PATH

SPINDLE SERVO (SPEED AND PHASE)	⇛
TRACKING SERVO DVD/CD CDV	⇛
SLED SERVO DVD/CD	➤
FOCUS SERVO	➤
SKEW SERVO DVD/CD	⇨

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇛	⇛	⇨

For Schematic Diagram

- Refer to page 4-7 for printed wiring board of MB-108 board.
- Refer to page 4-5 for waveform



MB-108 BOARD (3/6)
SERVO
-REF.NO.:3000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE

SIGNAL PATH

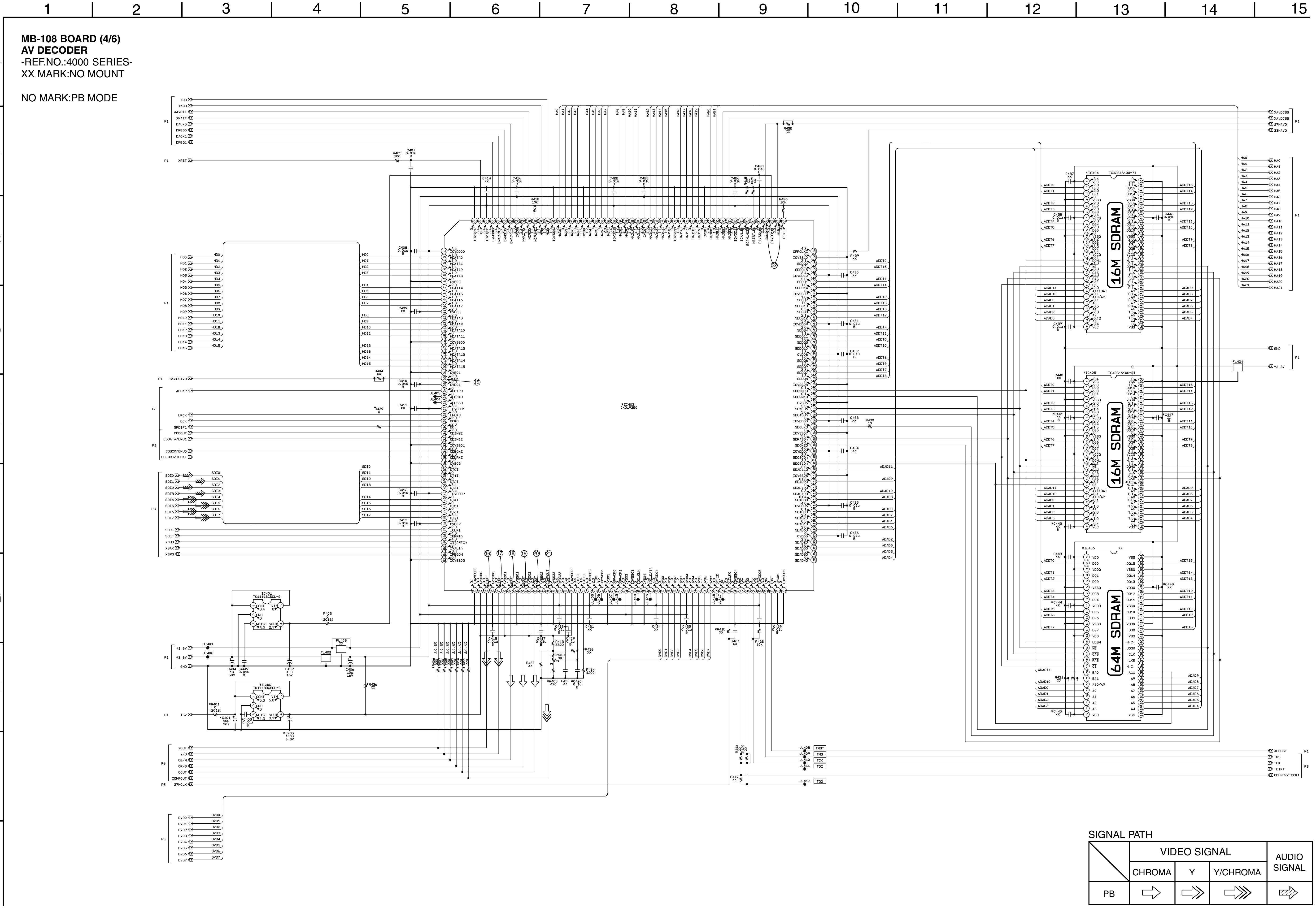
SPINDLE SERVO (SPEED AND PHASE)	⇒
TRACKING SERVO DVD/CD CDV	⇒
SLED SERVO DVD/CD	➡
FOCUS SERVO	➡
SKEW SERVO DVD/CD	⇒

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇒	⇒	⇒

SERVO
MB-108 (3/6)

For Schematic Diagram

- Refer to page 4-7 for printed wiring board of MB-108 board.
- Refer to page 4-5 for waveform



MB-108 BOARD (4/6)
AV DECODER
-REF.NO.:4000 SERIES-
XX MARK:NO MOUNT

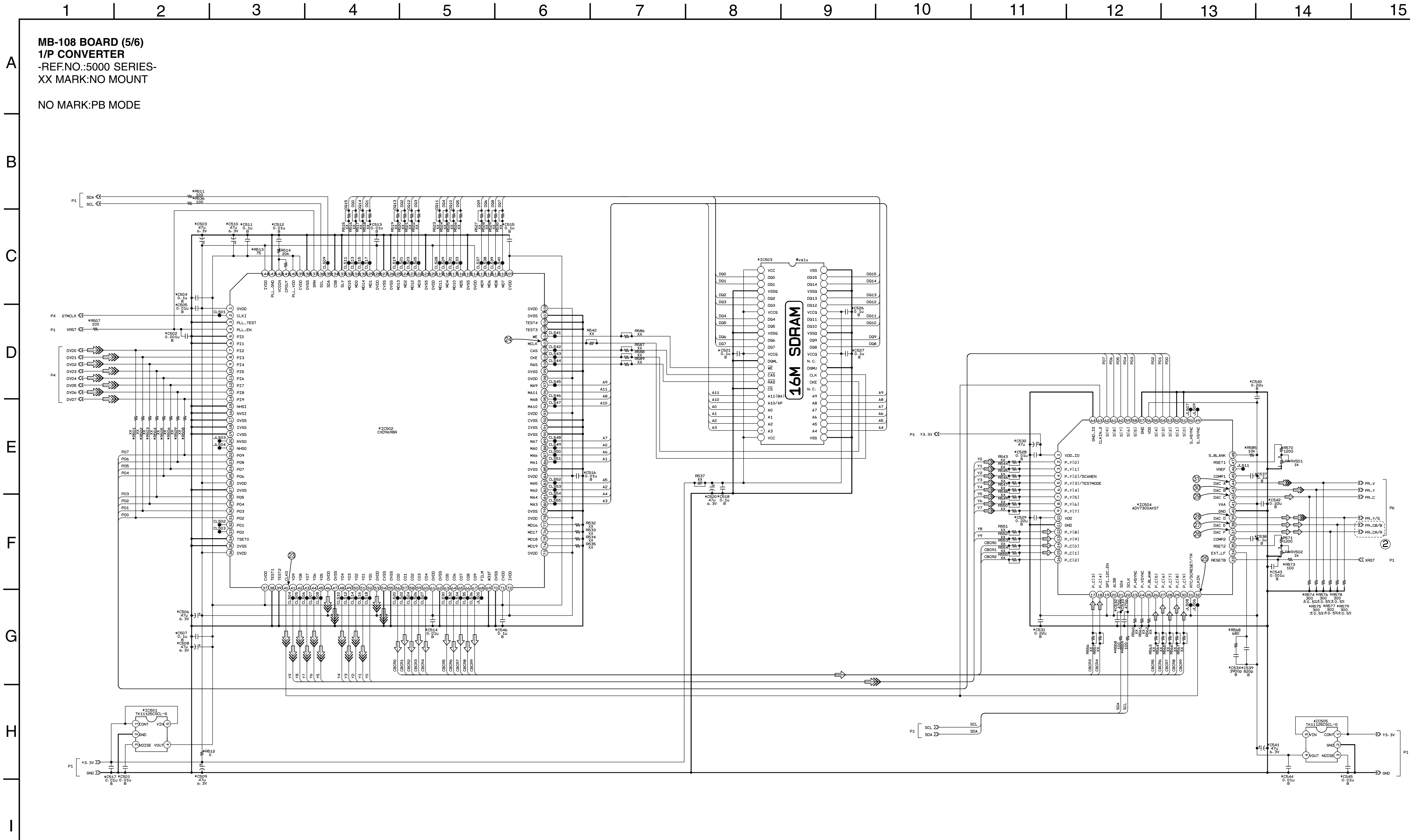
NO MARK:PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇛	⇛	⇨

For Schematic Diagram

- Refer to page 4-7 for printed wiring board of MB-108 board.
- Refer to page 4-5 for waveform

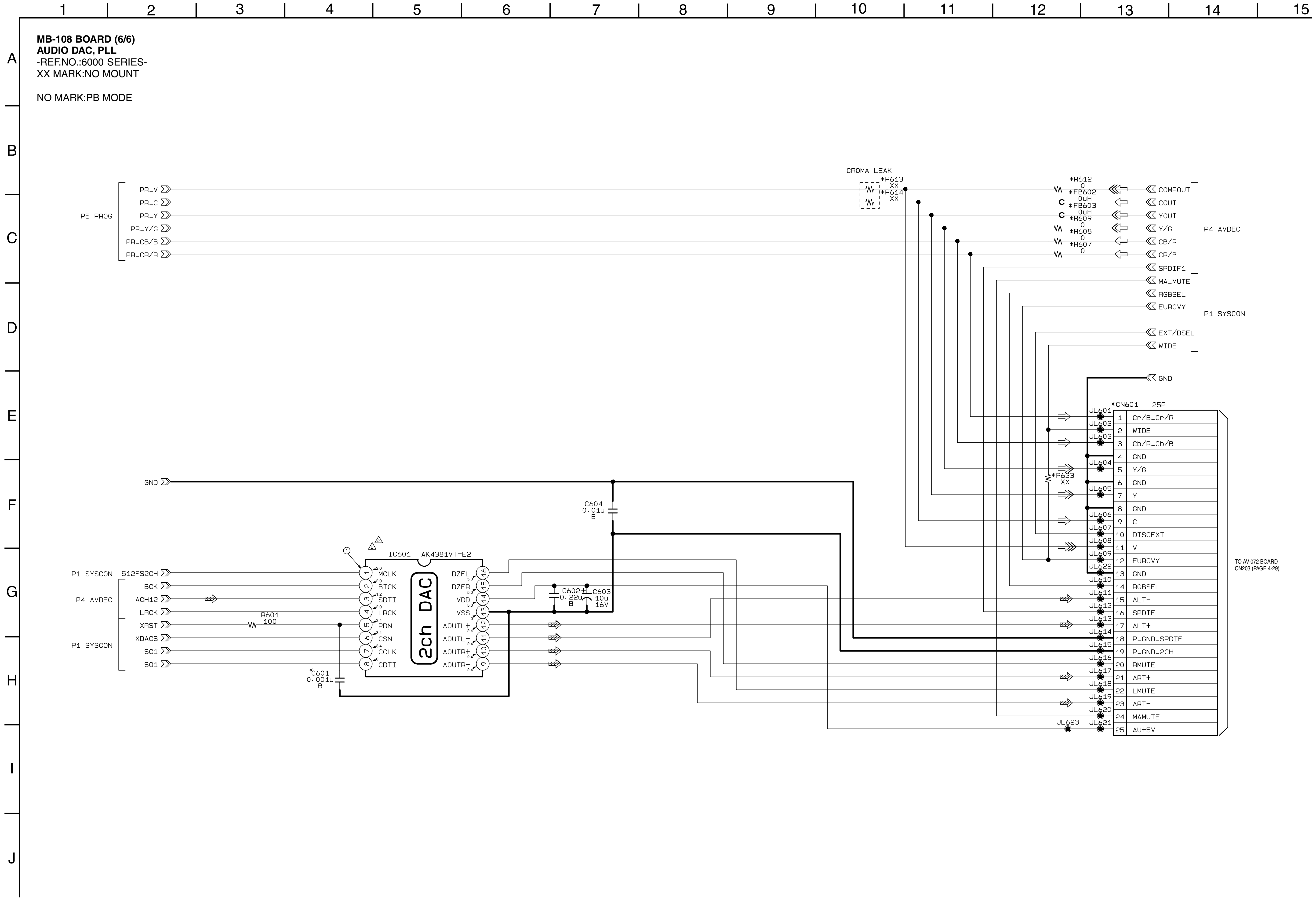


SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨	⇨	⇨

For Schematic Diagram

- Refer to page 4-7 for printed wiring board of MB-108 board.
- Refer to page 4-5 for waveform



AUDIO DAC, PLL

MB-108 (6/6)

MB-108 BOARD differential Part List (1/6-6/6)

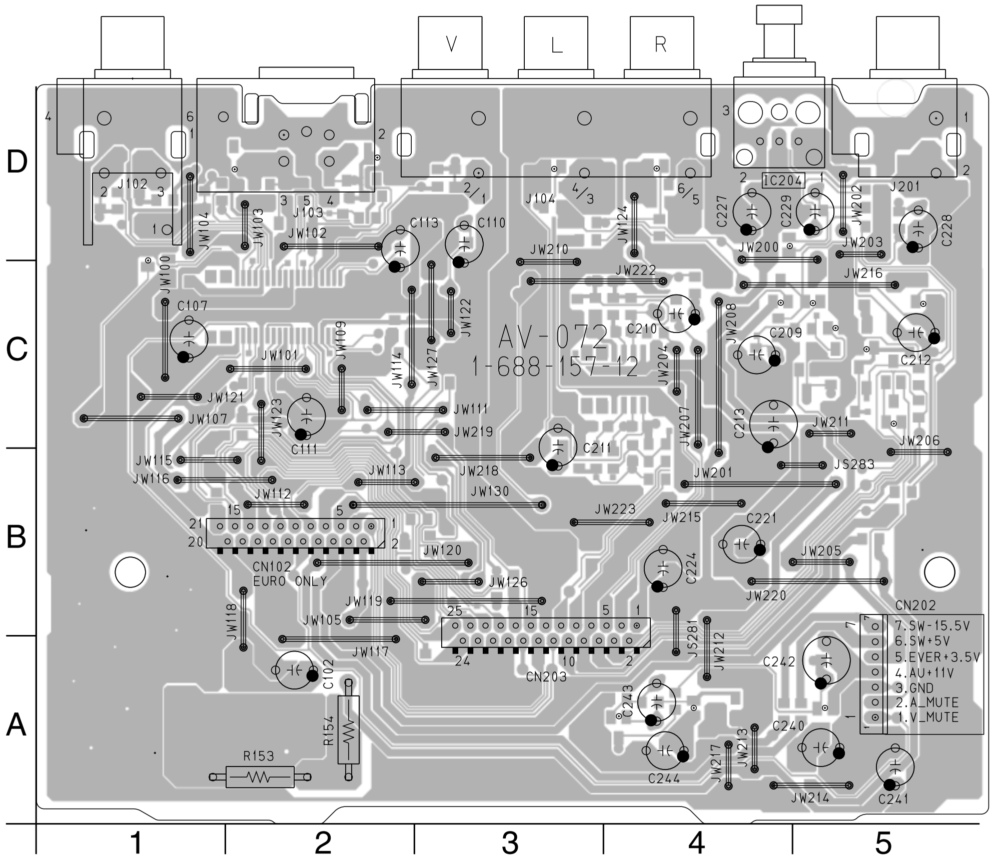
	NC625 (AUS)	NC625 (SP/AUS)	NC625 (UK/AEP)	NC625 (E)	NC625 (MX)	NC625 (SP)	NC665P (US)	NC665P (US/CND)	NC625 (PX/CND/US)
C106	9 :CHIP	9 :CHIP	9 :CHIP	9 :CHIP	9 :CHIP	9 :CHIP	12 :CHIP	9 :CHIP	9 :CHIP
C107	10 :CHIP	10 :CHIP	10 :CHIP	10 :CHIP	10 :CHIP	10 :CHIP	12 :CHIP	10 :CHIP	10 :CHIP
C130	0.01 25V :CHIP	0.01 25V :CHIP	0.01 25V :CHIP	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	0.01 25V :CHIP	XX
C401	10 16V :CHIP	10 16V :CHIP	10 16V :CHIP	10 16V :CHIP	10 16V :CHIP	10 16V :CHIP	XX	XX	10 16V
C403	0.01 25V :CHIP	0.01 25V :CHIP	0.01 25V :CHIP	0.01 25V :CHIP	0.01 25V :CHIP	0.01 25V :CHIP	XX	XX	0.01 25V :CHIP
C405	100 6.3V	100 6.3V	100 6.3V	100 6.3V	100 6.3V	100 6.3V	XX	XX	100 6.3V
C420	0.1 16V :CHIP	0.1 16V :CHIP	0.1 16V :CHIP	0.1 16V :CHIP	0.1 16V :CHIP	0.1 16V :CHIP	XX	XX	XX
C441	0.01 25V :CHIP	0.01 25V :CHIP	0.01 25V :CHIP	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	0.01 25V :CHIP	XX
C442	0.01 25V :CHIP	0.01 25V :CHIP	0.01 25V :CHIP	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	0.01 25V :CHIP	XX
C447	0.01 25V :CHIP	0.01 25V :CHIP	0.01 25V :CHIP	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	0.01 25V :CHIP	XX
C501	XX	XX	XX	XX	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	XX
C502	XX	XX	XX	XX	XX	XX	0.001 :CHIP	0.001 :CHIP	XX
C503	XX	XX	XX	XX	XX	XX	47 6.3V	47 6.3V	XX
C504	XX	XX	XX	XX	XX	XX	0.1 16V :CHIP	0.1 16V :CHIP	XX
C505	XX	XX	XX	XX	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	XX
C506	XX	XX	XX	XX	XX	XX	47 6.3V	47 6.3V	XX
C507	XX	XX	XX	XX	XX	XX	0.1 16V :CHIP	0.1 16V :CHIP	XX
C508	XX	XX	XX	XX	XX	XX	47 6.3V :CHIP	47 6.3V	XX
C509	XX	XX	XX	XX	XX	XX	47 6.3V :CHIP	47 6.3V	XX
C510	XX	XX	XX	XX	XX	XX	47 6.3V :CHIP	47 6.3V	XX
C511	XX	XX	XX	XX	XX	XX	0.1 16V :CHIP	0.1 16V :CHIP	XX
C512	XX	XX	XX	XX	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	XX
C513	XX	XX	XX	XX	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	XX
C514	XX	XX	XX	XX	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	XX
C515	XX	XX	XX	XX	XX	XX	0.1 16V :CHIP	0.1 16V :CHIP	XX
C516	XX	XX	XX	XX	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	XX
C517	XX	XX	XX	XX	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	XX
C518	XX	XX	XX	XX	XX	XX	0.1 16V :CHIP	0.1 16V :CHIP	XX
C520	XX	XX	XX	XX	XX	XX	47 6.3V :CHIP	47 6.3V	XX
C521	XX	XX	XX	XX	XX	XX	0.1 16V :CHIP	0.1 16V :CHIP	XX
C526	XX	XX	XX	XX	XX	XX	0.1 16V :CHIP	0.1 16V :CHIP	XX
C527	XX	XX	XX	XX	XX	XX	0.1 16V :CHIP	0.1 16V :CHIP	XX
C528	XX	XX	XX	XX	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	XX
C529	XX	XX	XX	XX	XX	XX	0.22 16V :CHIP	0.22 16V :CHIP	XX
C530	XX	XX	XX	XX	XX	XX	47 6.3V :CHIP	47 6.3V :CHIP	XX
C531	XX	XX	XX	XX	XX	XX	0.22 16V :CHIP	0.22 16V :CHIP	XX
C532	XX	XX	XX	XX	XX	XX	470 :CHIP	470 :CHIP	XX
C533	XX	XX	XX	XX	XX	XX	470 :CHIP	470 :CHIP	XX
C534	XX	XX	XX	XX	XX	XX	0.0039 :CHIP	0.0039 :CHIP	XX
C537	XX	XX	XX	XX	XX	XX	0.1 16V :CHIP	0.1 16V :CHIP	XX
C538	XX	XX	XX	XX	XX	XX	0.1 16V :CHIP	0.1 16V :CHIP	XX
C539	XX	XX	XX	XX	XX	XX	820 :CHIP	820 :CHIP	XX
C540	XX	XX	XX	XX	XX	XX	0.22 16V :CHIP	0.22 16V :CHIP	XX
C541	XX	XX	XX	XX	XX	XX	47 6.3V :CHIP	47 6.3V :CHIP	XX
C542	XX	XX	XX	XX	XX	XX	0.22 16V :CHIP	0.22 16V :CHIP	XX
C543	XX	XX	XX	XX	XX	XX	0.001 :CHIP	0.001 :CHIP	XX
C544	XX	XX	XX	XX	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	XX
C545	XX	XX	XX	XX	XX	XX	0.01 25V :CHIP	0.01 25V :CHIP	XX
C546	XX	XX	XX	XX	XX	XX	0.1 16V :CHIP	0.1 16V :CHIP	XX
FB602	0UH	0UH	0UH	0UH	0UH	0UH	XX	XX	0UH
FB603	0UH	0UH	0UH	0UH	0UH	0UH	XX	XX	0UH
IC108	IDT71V016SA15PH8 (SCD2994)	IDT71V016SA15PH8 (SCD2994)	IDT71V016SA15PH8 (SCD2994)	XX	XX	IDT71V016SA15PH8 (SCD2994)(SCD2994)	IDT71V016SA15PH8 (SCD2994)	IDT71V016SA15PH8	XX
IC204	XX	XX	XX	XX	XX	XX	XX	XX	XX
IC402	TK11133CSCL-G	TK11133CSCL-G	TK11133CSCL-G	XX	TK11133CSCL-G	TK11133CSCL-G	XX	XX	TK11133CSCL-G
IC405	MT48LC1M16A1TG-6STR	MT48LC1M16A1TG-6STR	MT48LC1M16A1TG-6STR	XX	XX	MT48LC1M16A1TG-6STR	MT48LC1M16A1TG-6STR	MT48LC1M16A1TG-6STR	XX
IC405	MSM56V16160F-10T47M1	MSM56V16160F-10T47M1	MSM56V16160F-10T47M1	XX	XX	MSM56V16160F-10T47M1	MSM56V16160F-10T47M1	MSM56V16160F-10T47M1	XX
IC405	GLT5160L16P-7TCT	GLT5160L16P-7TCT	GLT5160L16P-7TCT	XX	XX	GLT5160L16P-7TCT	GLT5160L16P-7TCT	GLT5160L16P-7TCT	XX

MB-108 BOARD differential Part List (1/6-6/6)

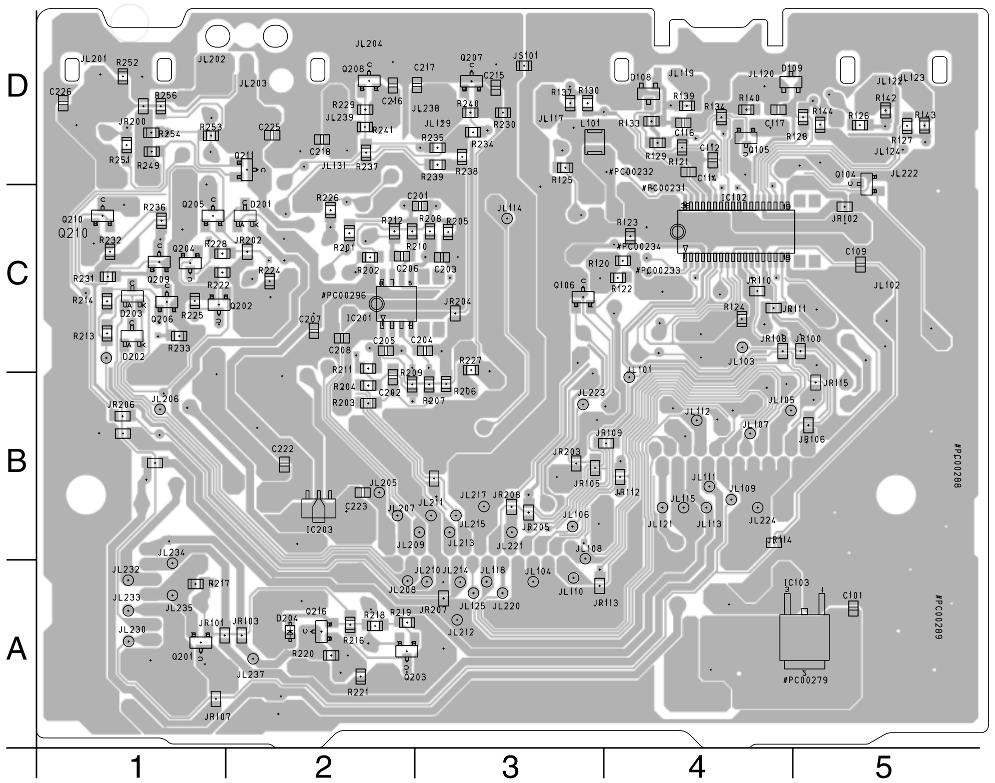
	NC625 (AUS)	NC625 (SP/AUS)	NC625 (UK/AEP)	NC625 (E)	NC625 (MX)	NC625 (SP)	NC665P (US)	NC665P (US/CND)	NC625 (PX/CND/US)
IC405	IC42S16100-7TG (T&R)	IC42S16100-7TG (T&R)	IC42S16100-7TG (T&R)	XX	XX	IC42S16100-7TG (T&R)	IC42S16100-7TG (T&R)	IC42S16100-7TG (T&R)	XX
IC405	HY57V161610DTC-7TR	HY57V161610DTC-7TR	HY57V161610DTC-7TR	XX	XX	HY57V161610DTC-7TR	HY57V161610DTC-7TR	HY57V161610DTC-7TR	XX
IC501	XX	XX	XX	XX	XX	XX	TK11133CSCL-G	TK11133CSCL-G0	XX
IC502	XX	XX	XX	XX	XX	XX	CDX9698R	CDX9698R	XX
IC503	XX	XX	XX	XX	XX	XX	XX	XX	XX
IC504	XX	XX	XX	XX	XX	XX	ADV7300AKST	ADV7300AKST	XX
IC505	XX	XX	XX	XX	XX	XX	TK11133CSCL-G	TK11133CSCL-G	XX
R114	0	0	0	0	0	0	470 :CHIP	470 :CHIP	0 :CHIP
R164	470 :CHIP	470 :CHIP	12K :CHIP	22K :CHIP	220K :CHIP	2.2K :CHIP	XX	XX	XX
R166	12K :CHIP	12K :CHIP	12K :CHIP	12K :CHIP	12K :CHIP	12K :CHIP	6.8K :CHIP	6.8K :CHIP	12K :CHIP
R169	12K :CHIP	12K :CHIP	47K :CHIP	12K :CHIP	12K :CHIP	22K :CHIP	XX	XX	XX
R401	0	0	0	0	0	0	XX	XX	0 :CHIP
R403	470 :RN-CP	470 :RN-CP	470 :RN-CP	470 :RN-CP	470 :RN-CP	470 :RN-CP	XX	XX	470 :RN-CP
R406	220 :RN-CP	220 :RN-CP	220 :RN-CP	220 :RN-CP	220 :RN-CP	220 :RN-CP	XX	XX	220 :RN-CP
RV401	1K	1K	1K	1K	1K	1K	XX	XX	1K
RV501	XX	XX	XX	XX	XX	XX	1K	1K	XX
RV502	XX	XX	XX	XX	XX	XX	1K	1K	XX

AV-072 (AUDIO OUT, VIDEO OUT) PRINTED WIRING BOARD

AV-072 BOARD SIDE A



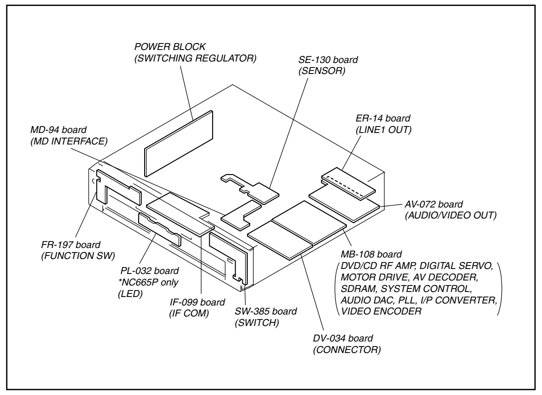
AV-072 BOARD SIDE B



- : Uses unleaded solder.

For printed wiring board

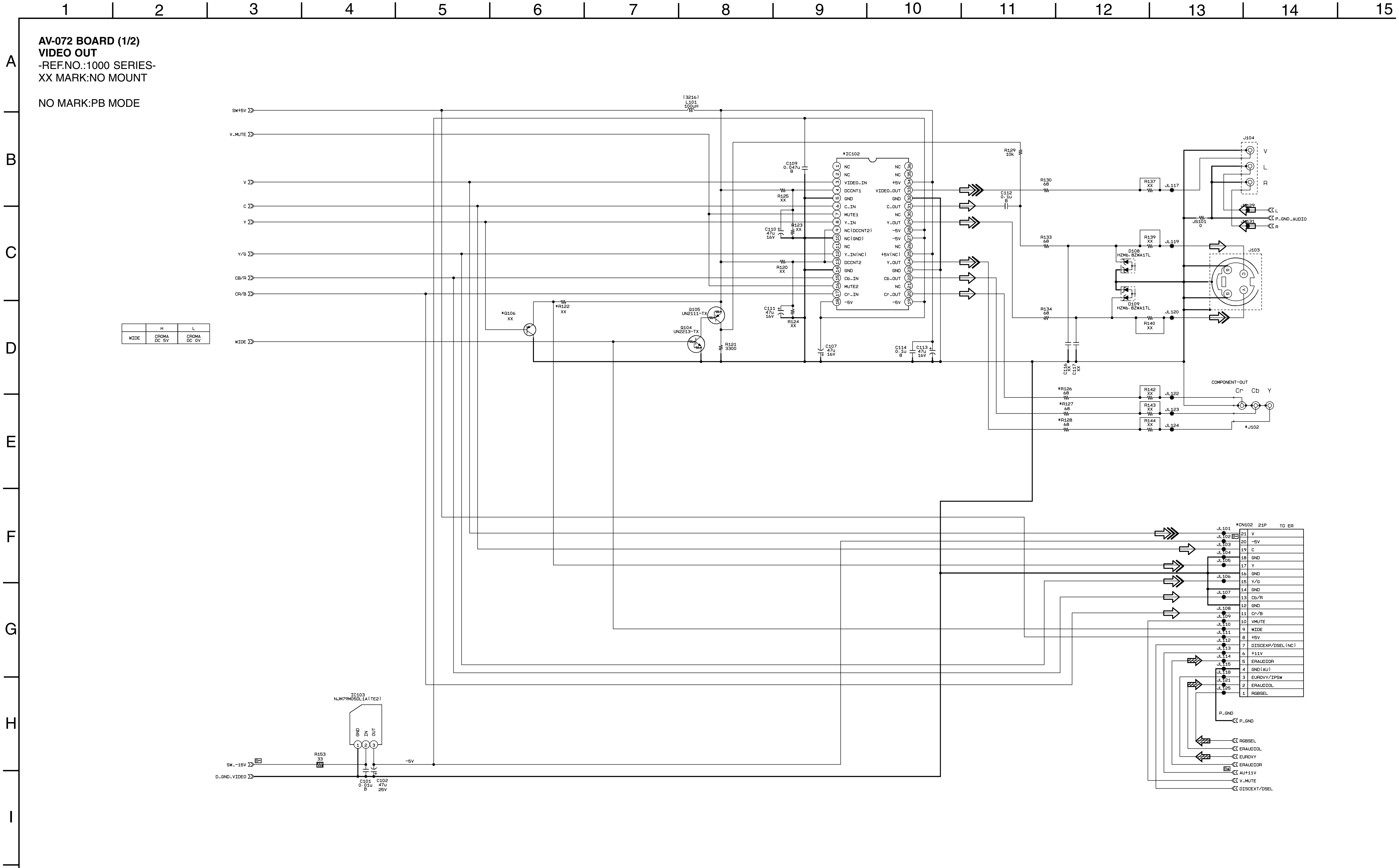
There are a few cases that the part printed on this diagram isn't mounted in this model.


POWER BLOCK (SWITCHING REGULATOR)
SE-130 board (SENSOR)
MD-94 board (MD INTERFACE)
ER-14 board (LINE1 OUT)
AV-072 board (AUDIO/VIDEO OUT)
FR-197 board (FUNCTION SW)
PL-032 board *NC665P only (LED)
IF-099 board (IF COM)
SW-385 board (SWITCH)
MB-108 board DVD/CD RF AMP, DIGITAL SERVO, MOTOR DRIVE, AV DECODER, SDRAM, SYSTEM CONTROL, AUDIO DAC, PLL, I/P CONVERTER, VIDEO ENCODER
DV-034 board (CONNECTOR)

AV-072 BOARD

A SIDE		B SIDE	
IC204	D-4	IC102	C-4
		IC103	A-5
		IC201	C-2
		IC203	B-2
		Q104	D-5
		Q105	D-4
		Q106	C-3
		Q201	A-1
		Q202	C-2
		Q203	A-2
		Q204	C-1
		Q205	C-1
		Q206	C-1
		Q207	D-3
		Q208	D-2
		Q209	C-1
		Q210	C-1
		Q211	D-2
		Q216	A-2
		D108	D-4
		D109	D-4
		D201	C-2
		D202	C-1
		D203	C-1
		D204	A-2

For Schematic Diagram
- Refer to page 4-25 for printed wiring board of AV-072 board
- Refer to page 4-5 for waveform AV-072


AV-072 BOARD (1/2)
VIDEO OUT
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

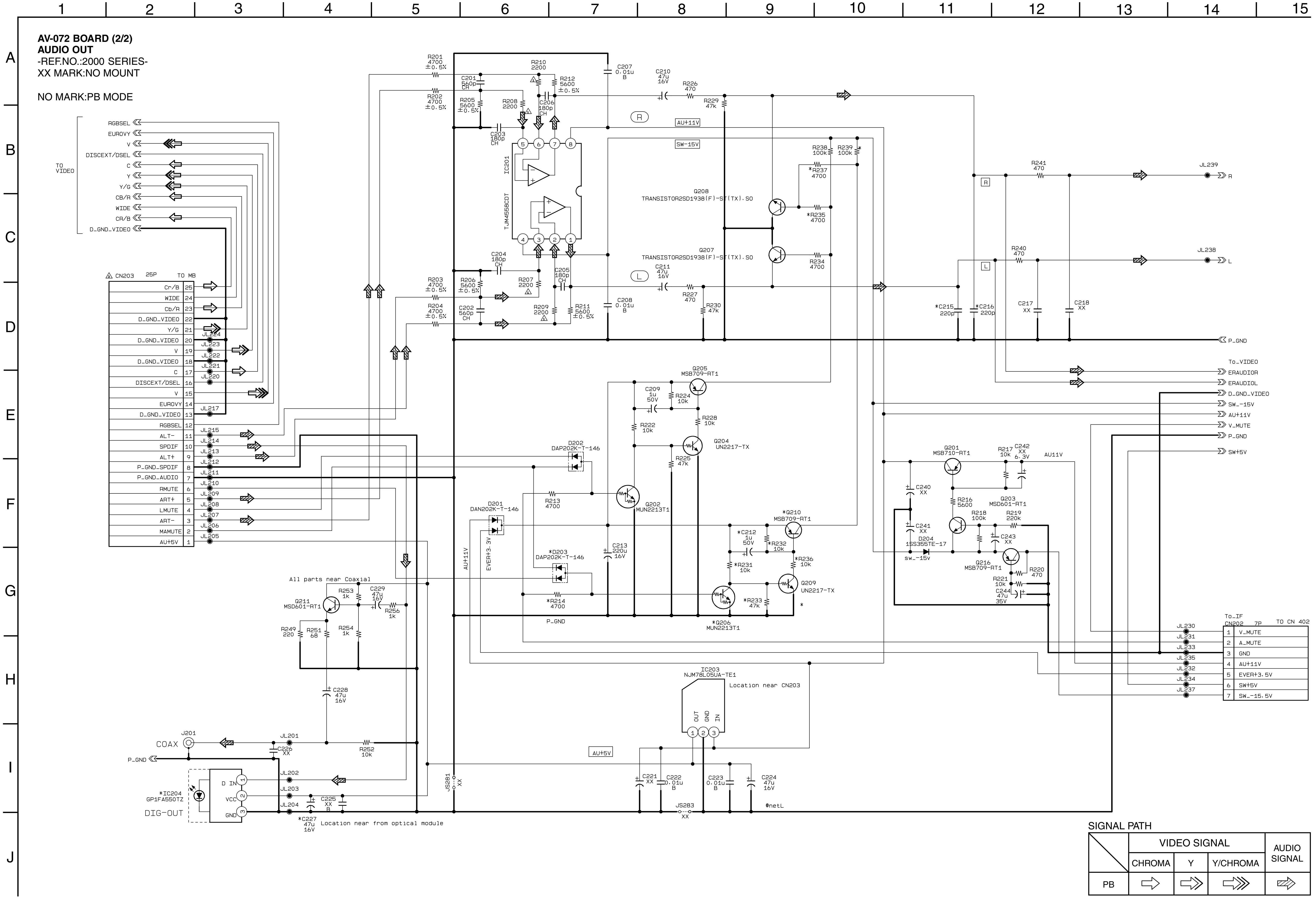
NO MARK:PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨	⇨	▨

For Schematic Diagram

- Refer to page 4-25 for printed wiring board of AV-072 board
- Refer to page 4-5 for waveform AV-072



AV-072 BOARD (2/2)
AUDIO OUT
-REF.NO.:2000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE

SIGNAL PATH

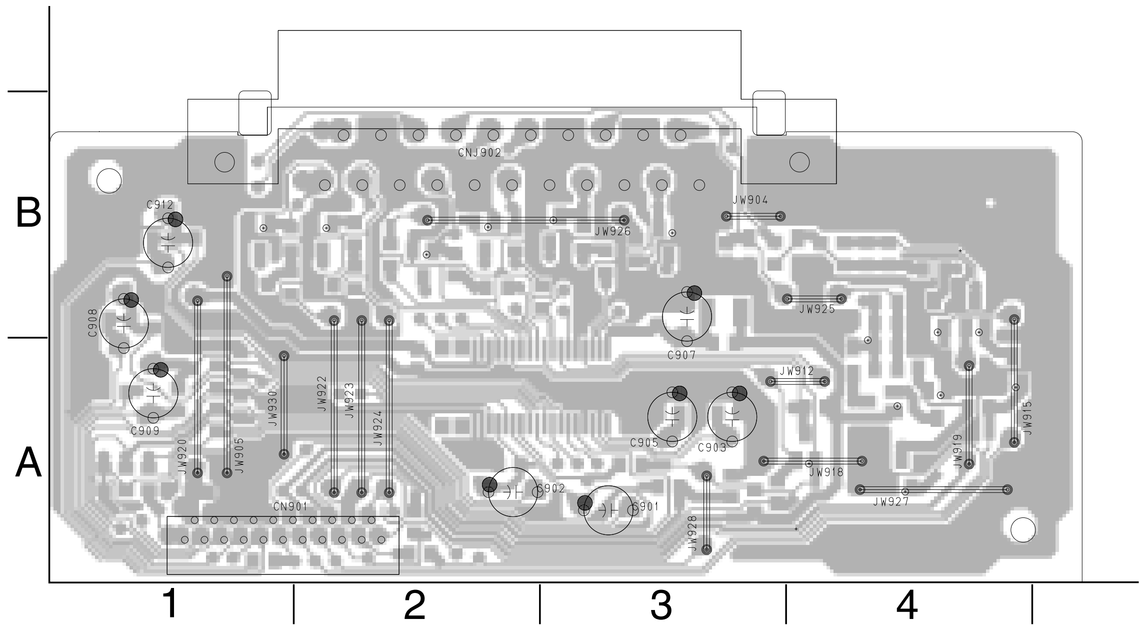
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨⇨	⇨⇨⇨	▨⇨

AV-072 BOARD differential Part List (1/2-2/2)

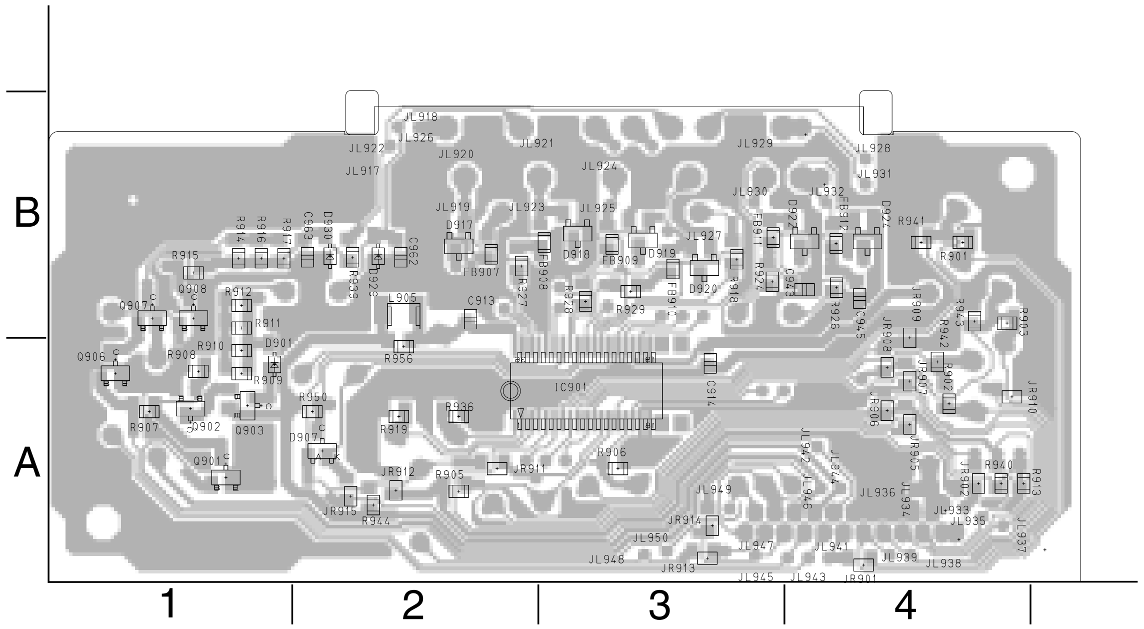
	NC625 (AUS)	NC625 (SP/AUS)	NC625 (UK/AEP)	NC665P (US)	NC665P (US/CND)	NC625 (E/MX)	NC625 (PX/CND/US)
C212	XX	XX	1	XX	XX	C212	XX
C215	220P :CHIP	220P :CHIP	220P :CHIP	XX	XX	XX	XX
C216	220P :CHIP	220P :CHIP	220P :CHIP	XX	XX	XX	XX
C227	47 16V	47 16V	XX	47 16V	47 16V	XX	XX
CN102	XX	XX	“CONN.,FPC/FFC(1MM PIC) 21P”	XX	XX	XX	XX
D203	XX	XX	DAP202K-T-146	XX	XX	XX	XX
IC102	LA73050-TLM	LA73050-TLM	LA73051-TLM	LA73053-TLM-E	LA73053-TLM-E	LA73050-TLM	LA73050-TLM
IC204	GP1FA550TZ	GP1FA550TZ	XX	GP1FA550TZ	GP1FA550TZ	XX	XX
J102	“JACK, PIN 3P”	“JACK, PIN 3P”	XX	“JACK, PIN 3P”	“JACK, PIN 3P”	“JACK, PIN 3P”	“JACK, PIN 3P”
Q106	XX	XX	2SA1162-YG-TE85L	XX	XX	XX	XX
Q206	XX	XX	MUN2213T1	XX	XX	XX	XX
Q209	XX	XX	UN2217-TX	XX	XX	XX	XX
Q210	XX	XX	MSB709-RT1	XX	XX	XX	XX
R122	XX	XX	1K	XX	XX	XX	XX
R126	68 :CHIP	68 :CHIP	XX	68 :CHIP	68 :CHIP	68 :CHIP	68 :CHIP
R127	68 :CHIP	68 :CHIP	XX	68 :CHIP	68 :CHIP	68 :CHIP	68 :CHIP
R128	68 :CHIP	68 :CHIP	XX	68 :CHIP	68 :CHIP	68 :CHIP	68 :CHIP
R214	XX	XX	4.7K :CHIP	XX	XX	XX	XX
R231	XX	XX	10K :CHIP	XX	XX	XX	XX
R232	XX	XX	10K :CHIP	XX	XX	XX	XX
R233	XX	XX	47K :CHIP	XX	XX	XX	XX
R235	4.7K :CHIP	4.7K :CHIP	XX	4.7K :CHIP	4.7K :CHIP	4.7K :CHIP	4.7K :CHIP
R236	XX	XX	10K :CHIP	XX	XX	XX	XX
R237	XX	XX	4.7K :CHIP	XX	XX	XX	XX
R239	XX	XX	100K :CHIP	XX	XX	XX	XX

ER-14 (LINE1 OUT) PRINTED WIRING BOARD

ER-14 BOARD (SIDE A)



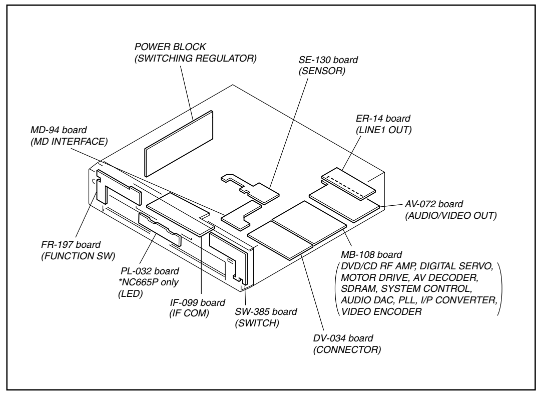
ER-14 BOARD (SIDE B)



- LF : Uses unleaded solder.

For printed wiring board

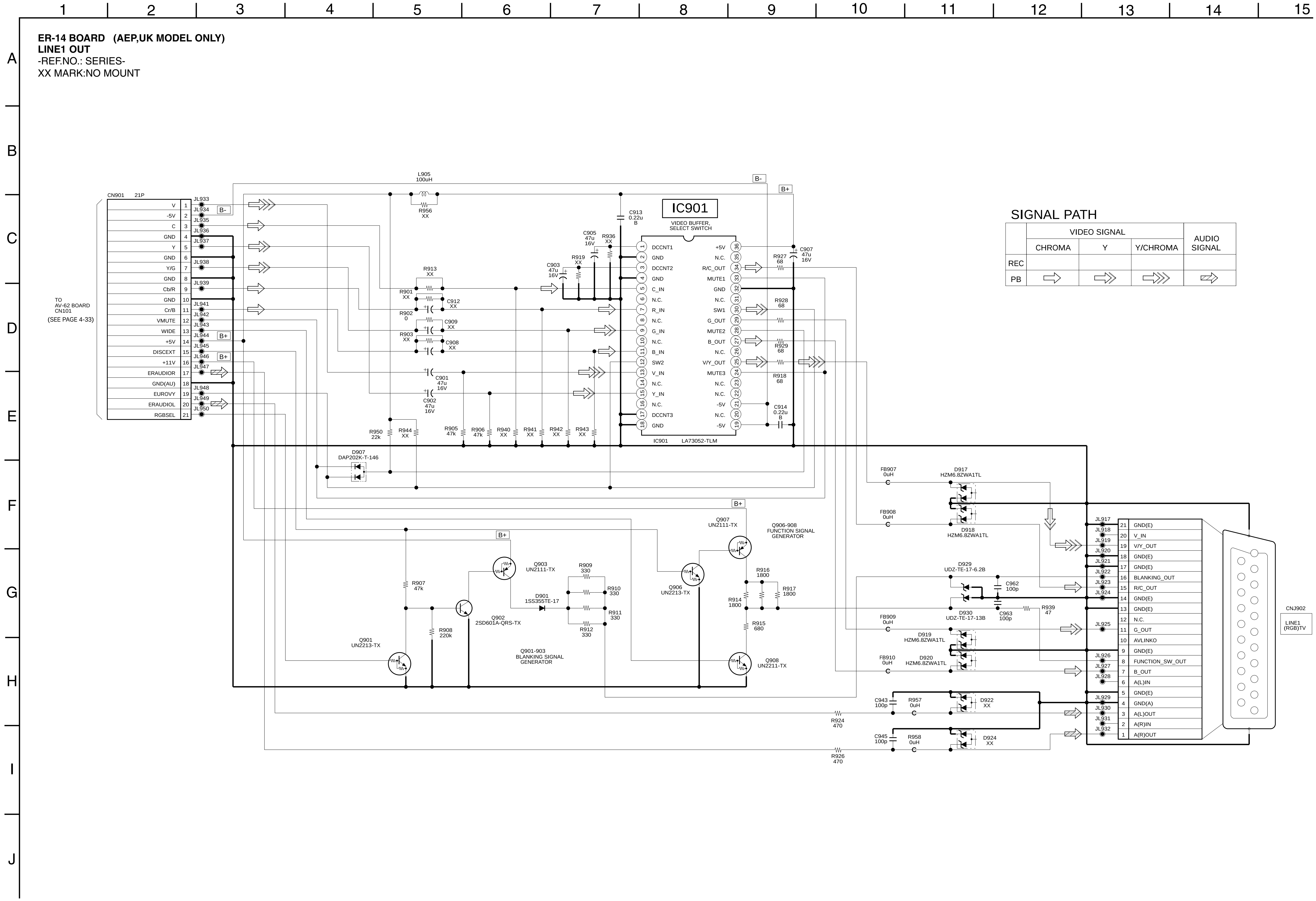
There are a few cases that the part printed on this diagram isn’t mounted in this model.



ER-14 BOARD

CN901	A-1	IC901	A-3
CN902	C-2		
		Q901	A-4
D901	A-4	Q902	A-4
D907	A-4	Q903	A-4
D917	B-3	Q906	A-4
D918	B-3	Q907	B-4
D919	B-2	Q908	B-4
D920	B-2		
D929	B-3		
D930	B-4		

For Schematic Diagram
- Refer to page 4-33 for printed wiring board of ER-14 board
- Refer to page 4-5 for waveform



ER-14 BOARD (AEP,UK MODEL ONLY)
LINE1 OUT
-REF.NO.: SERIES-
XX MARK:NO MOUNT

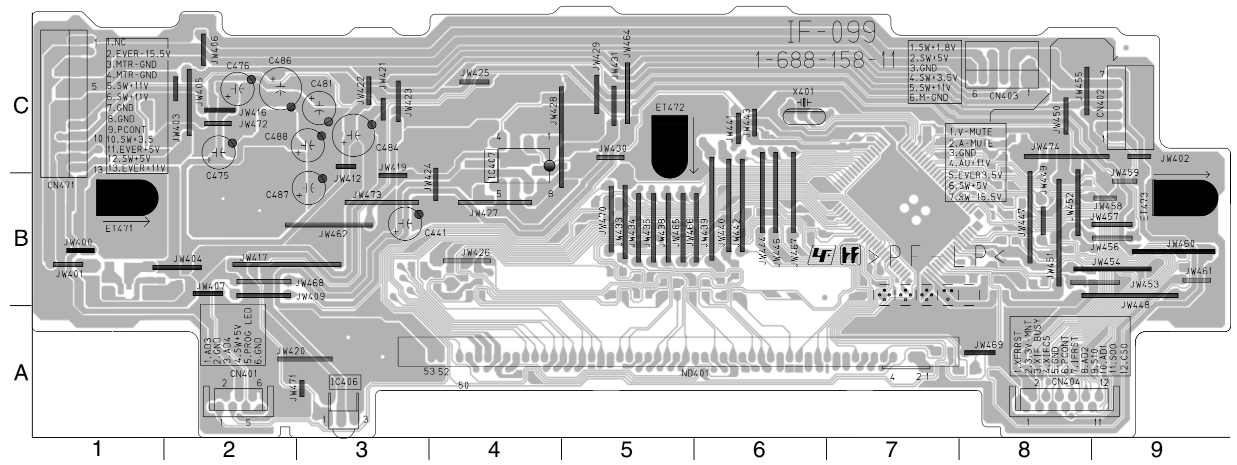
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB	⇨	⇨⇨	⇨⇨⇨	▨

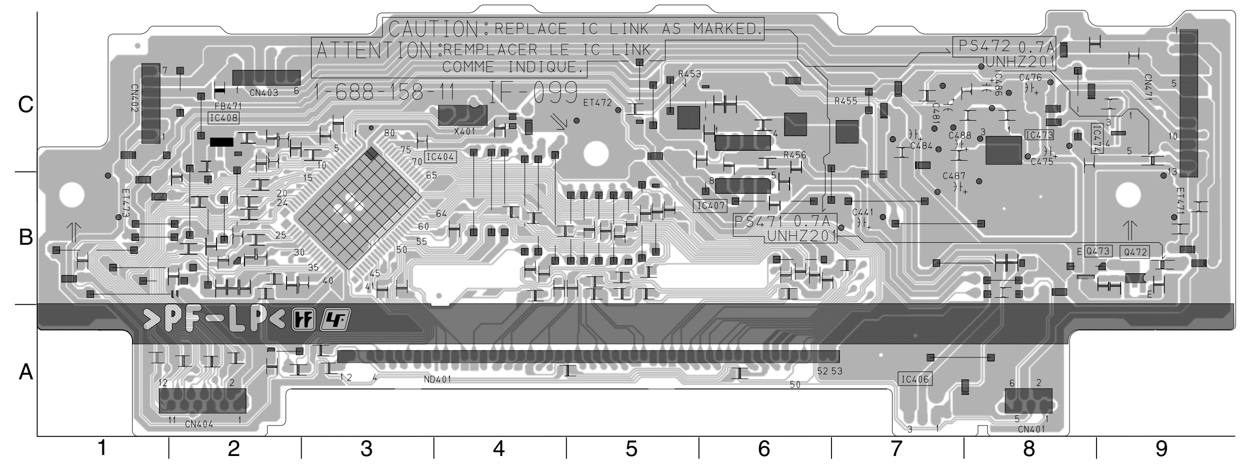
LINE1 OUT
ER-14

IF-099 (IF COM) PRINTED WIRING BOARD

IF-099 BOARD (SIDE A)



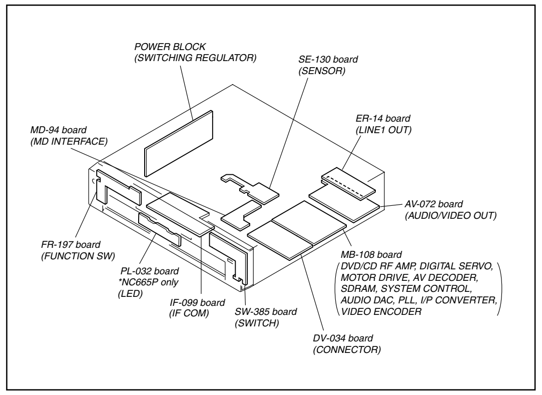
IF-099 BOARD (SIDE B)



- 𝕷𝔽 : Uses unleaded solder.

For printed wiring board

There are a few cases that the part printed on this diagram isn’t mounted in this model.



IF-099 BOARD

A SIDE

IC406	A-3
IC407	C-4

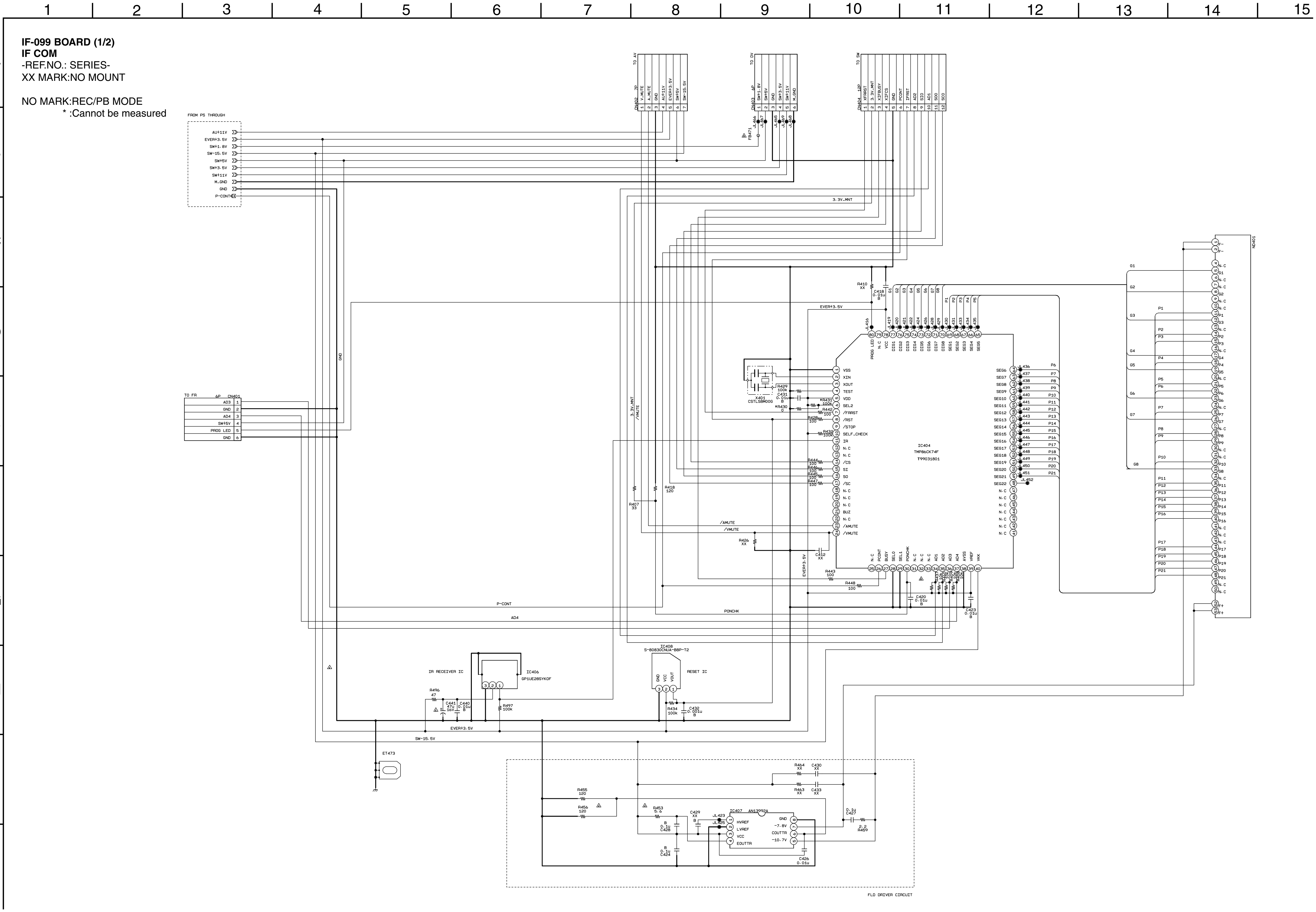
B SIDE

IC404	C-4
IC406	A-7
IC407	B-6
IC408	C-2
IC473	C-8
IC474	C-8
Q472	B-9
Q473	B-8

For Schematic Diagram
- Refer to page 4-37 for printed wiring board of IF-099 board
- Refer to page 4-5 for waveform IF-099

IF-099 BOARD (1/2)
IF COM
-REF.NO.: SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE
* :Cannot be measured



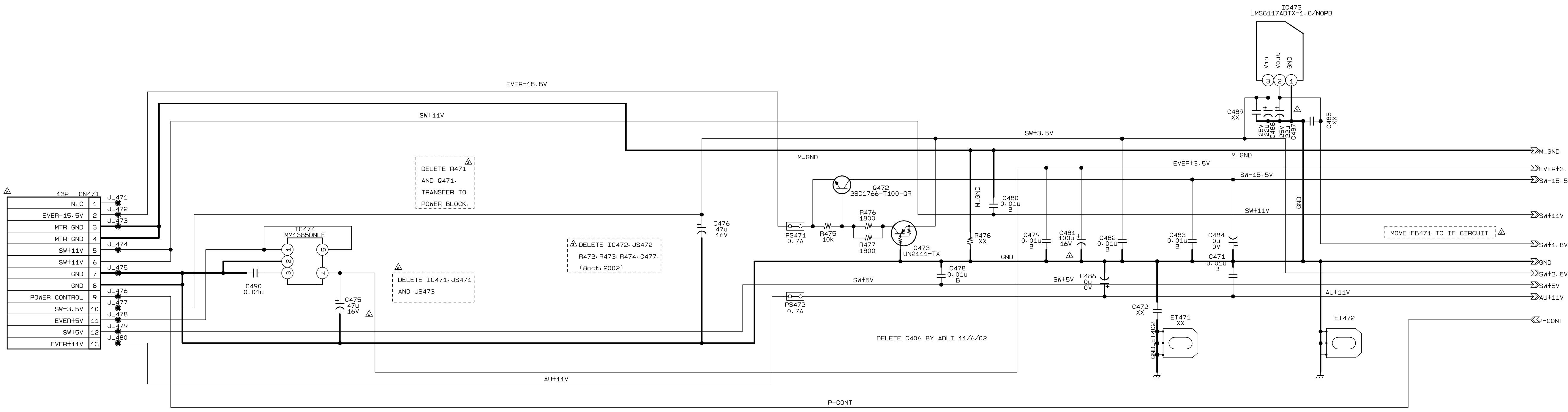
For Schematic Diagram
- Refer to page 4-37 for printed wiring board of IF-099 board
- Refer to page 4-5 for waveform IF-099

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A B C D E F G H I J

IF-099 BOARD (2/2)
IF COM
-REF.NO.: SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE
* :Cannot be measured



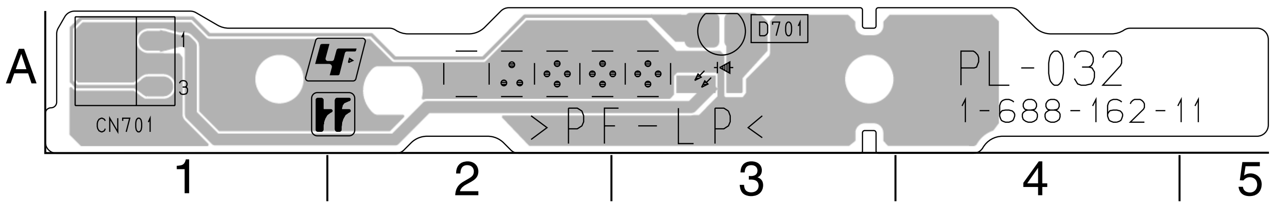
IF-099 BOARD differential Part List (1/2-2/2)

	NC665P (US)	NC665P (US/CND)	NC625 (AUS/PX/CND/US)	NC625 (SP/E/MX/UK/AEP/AUS)
R430	XX	XX	0	0
R431	100K : CHIP	100K : CHIP	XX	XX

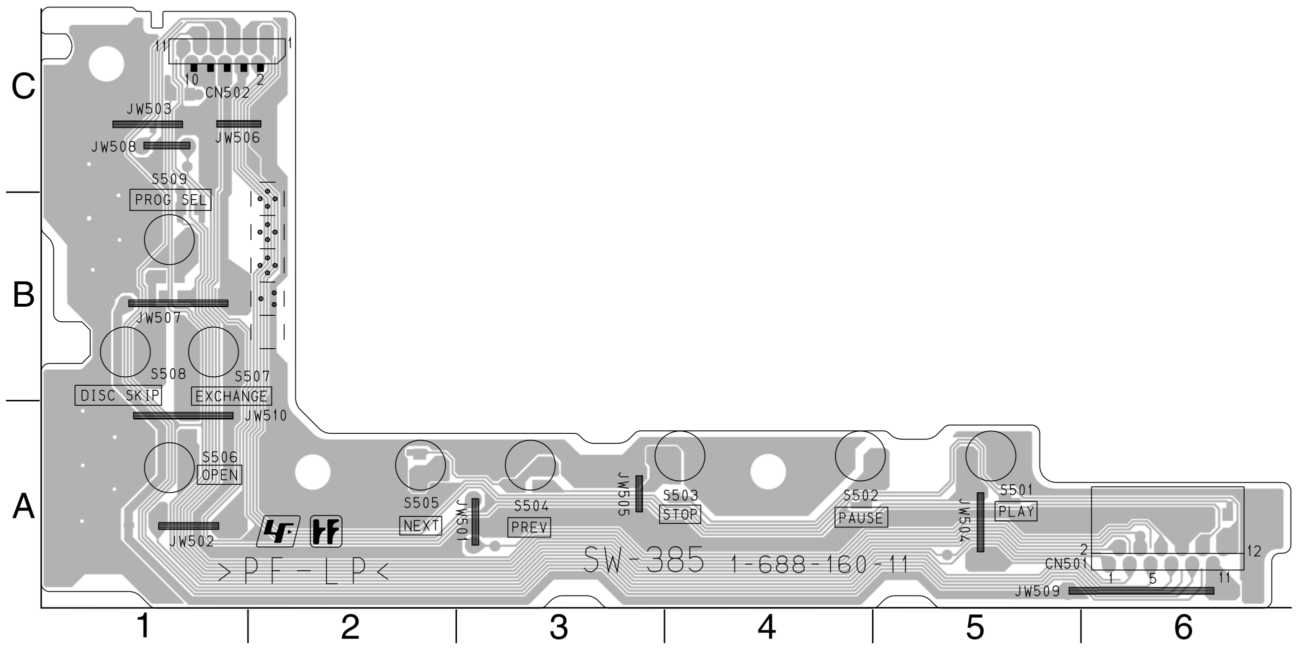
PL-032 (LED), SW-385 (SWITCH) PRINTED WIRING BOARDS

- Ⓛ : Uses unleaded solder.

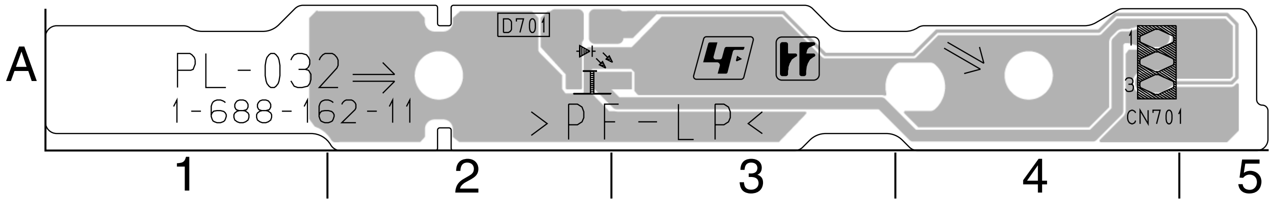
PL-032 BOARD (SIDE A)



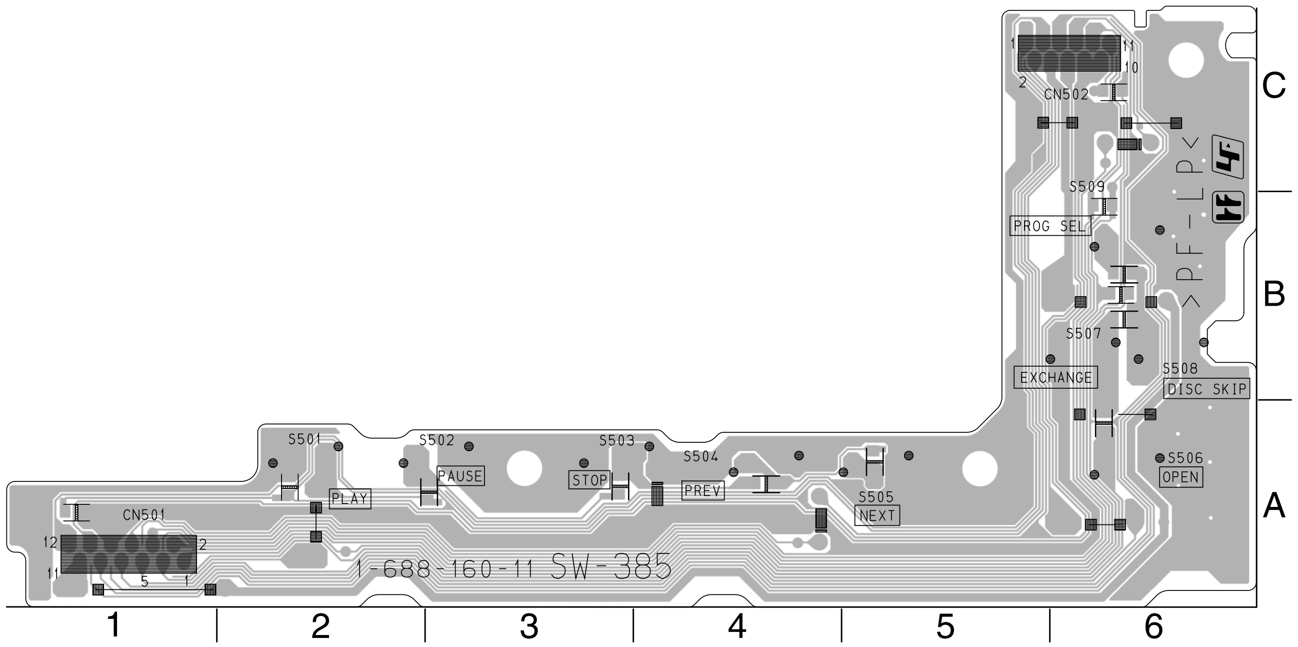
SW-385 BOARD (SIDE A)



PL-032 BOARD (SIDE B)



SW-385 BOARD (SIDE B)

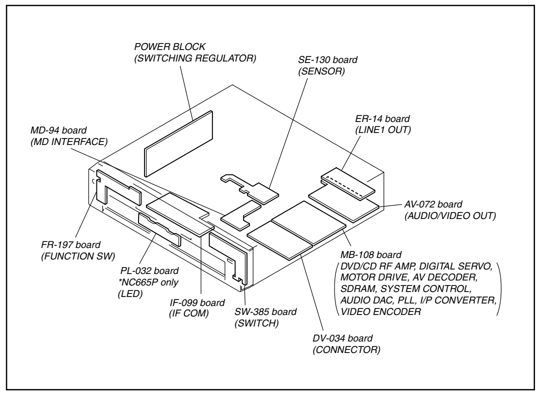


PL-032 BOARD

A SIDE		B SIDE	
D701	A-3	D701	A-2

For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

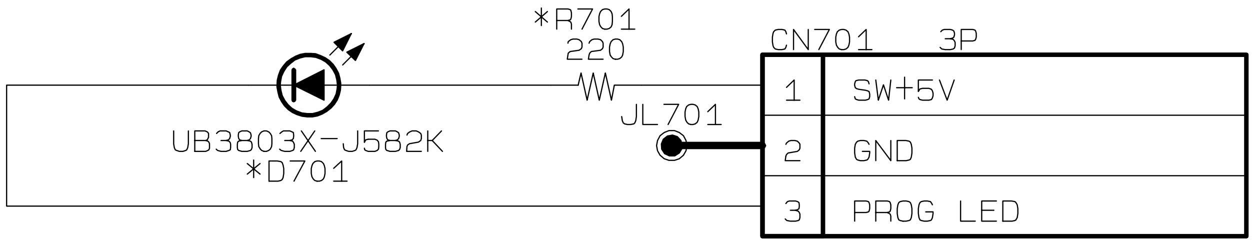


For Schematic Diagram

- Refer to page 4-43 for printed wiring boards of PL-032, SW-385 boards

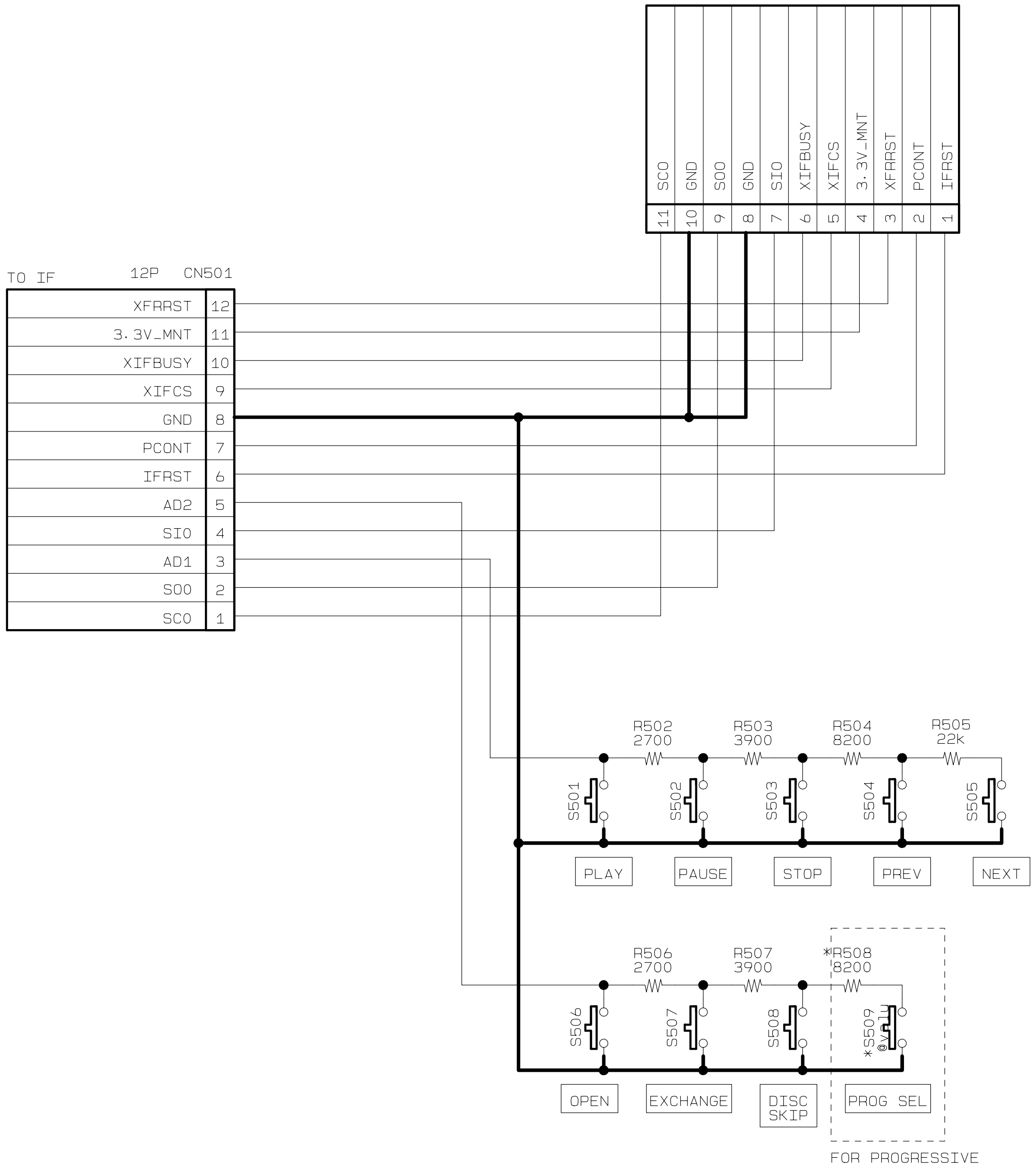
PL-032 BOARD
LED
-REF.NO.: SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE
* :Cannot be measured



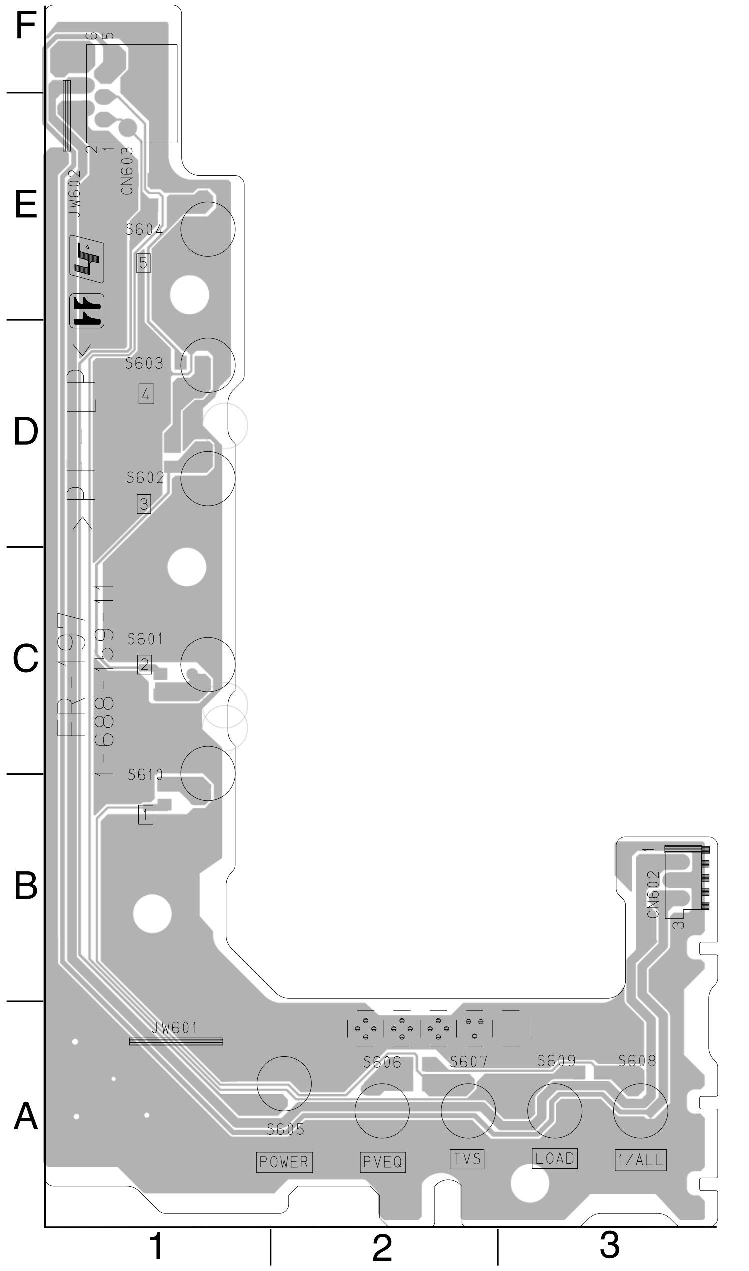
SW-385 BOARD
SWITCH
-REF.NO.: SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE



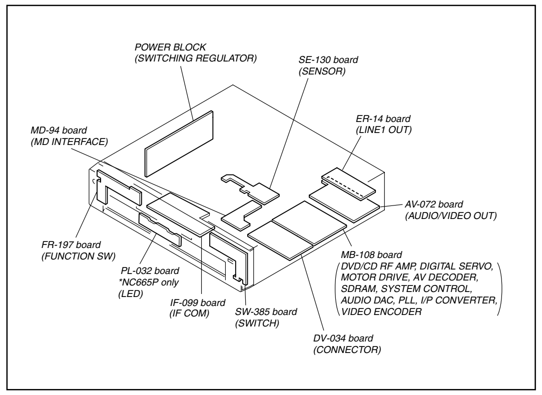
FR-197 (FUNCTION SW) PRINTED WIRING BOARD

FR-197 BOARD (SIDE A)



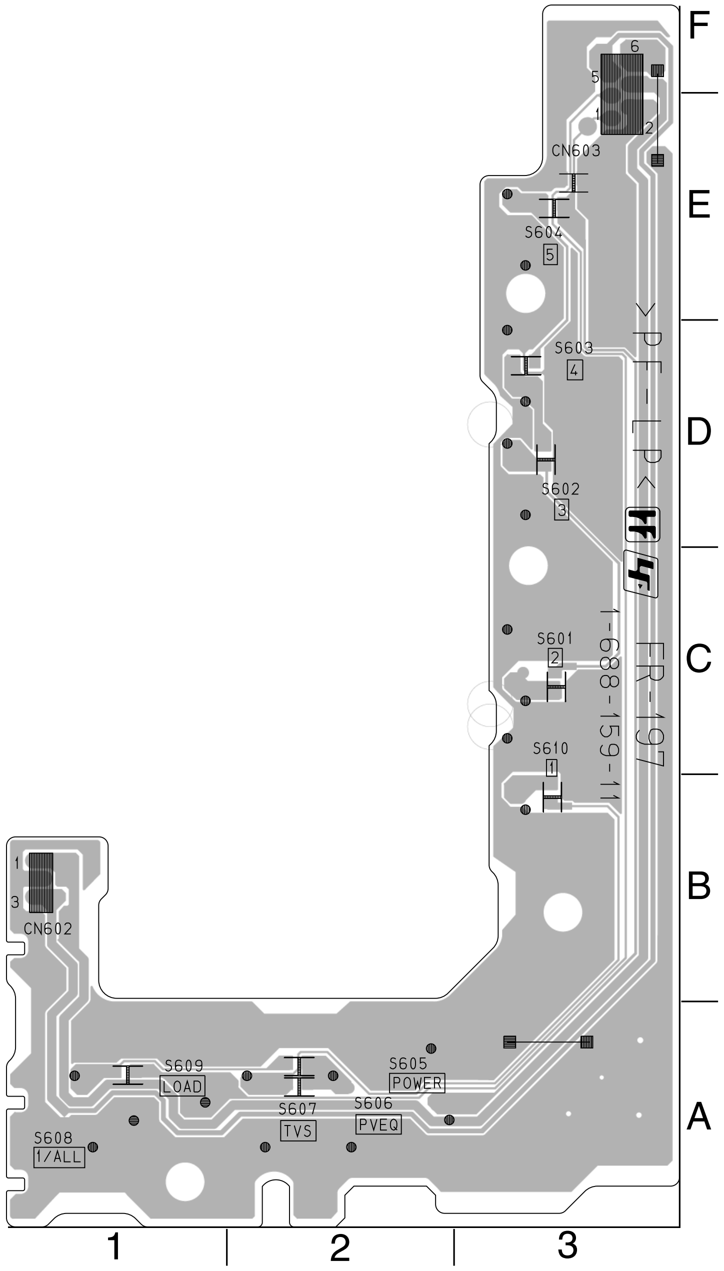
For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



- : Uses unleaded solder.

FR-197 BOARD (SIDE B)

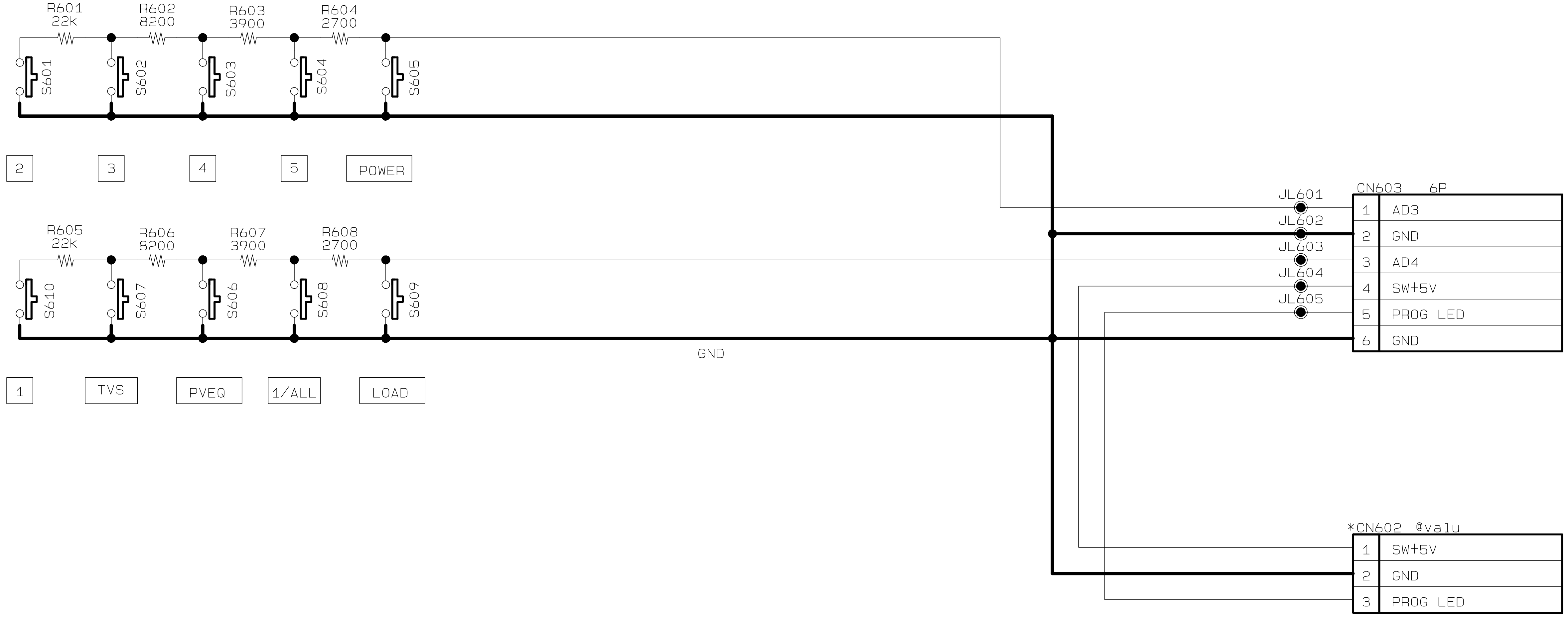


For Schematic Diagram

- Refer to page 4-47 for printed wiring board of FR-197 board.

FR-197 BOARD
FUNCTION SW
-REF.NO.: SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE

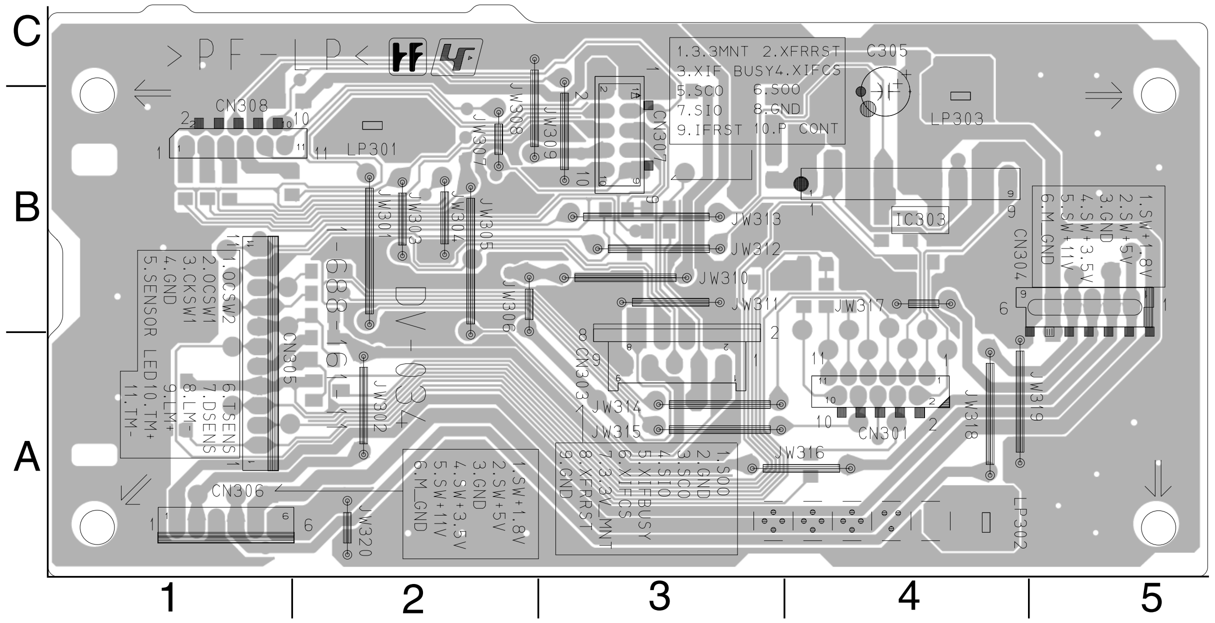


FR-197 BOARD differential Part List

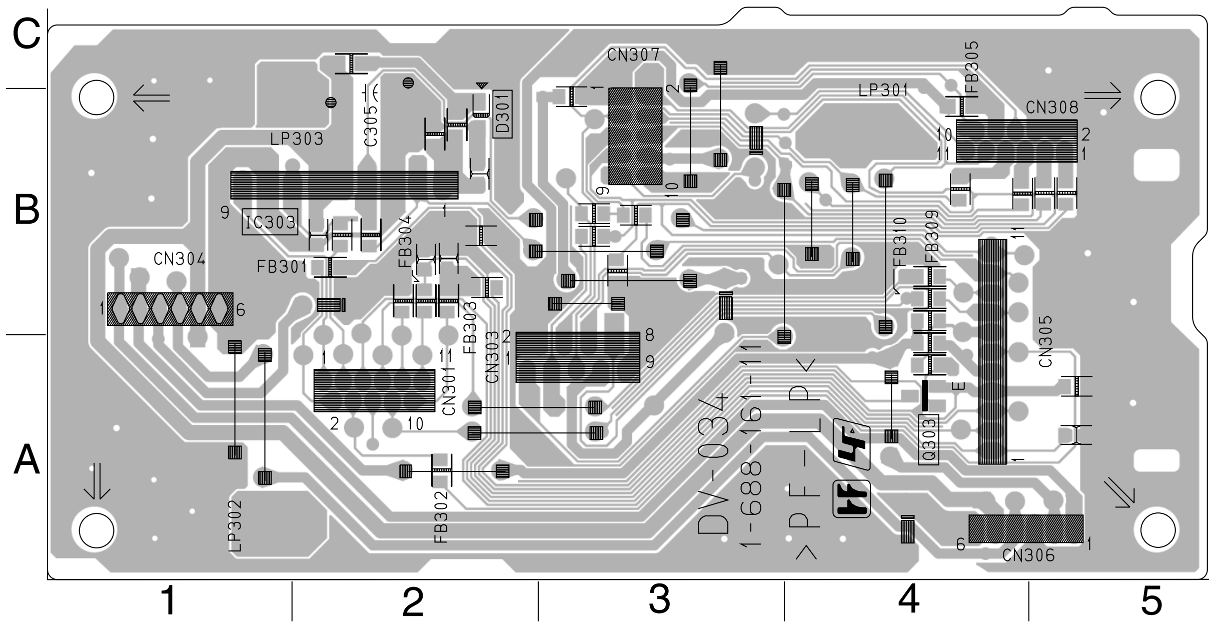
	NC665P (US)	NC665P (US/CND)	NC625 (AUS/PX/CND/US)	NC625 (SP/E/MX/UK/AEP/AUS)
CN602	HARNESS FP-176	HARNESS FP-176	XX	XX

DV-034 (CONNECTOR) PRINTED WIRING BOARD

DV-034 BOARD (SIDE A)



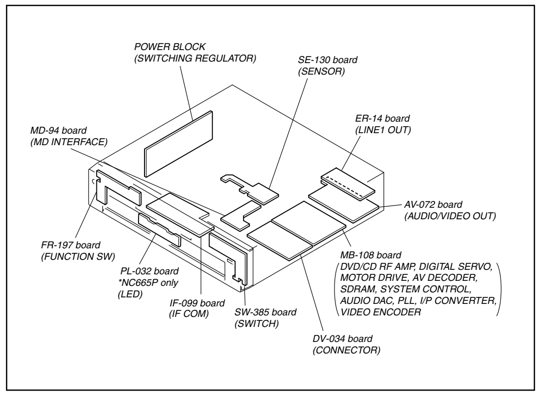
DV-034 BOARD (SIDE B)



• : Uses unleaded solder.

For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



DV-034 BOARD

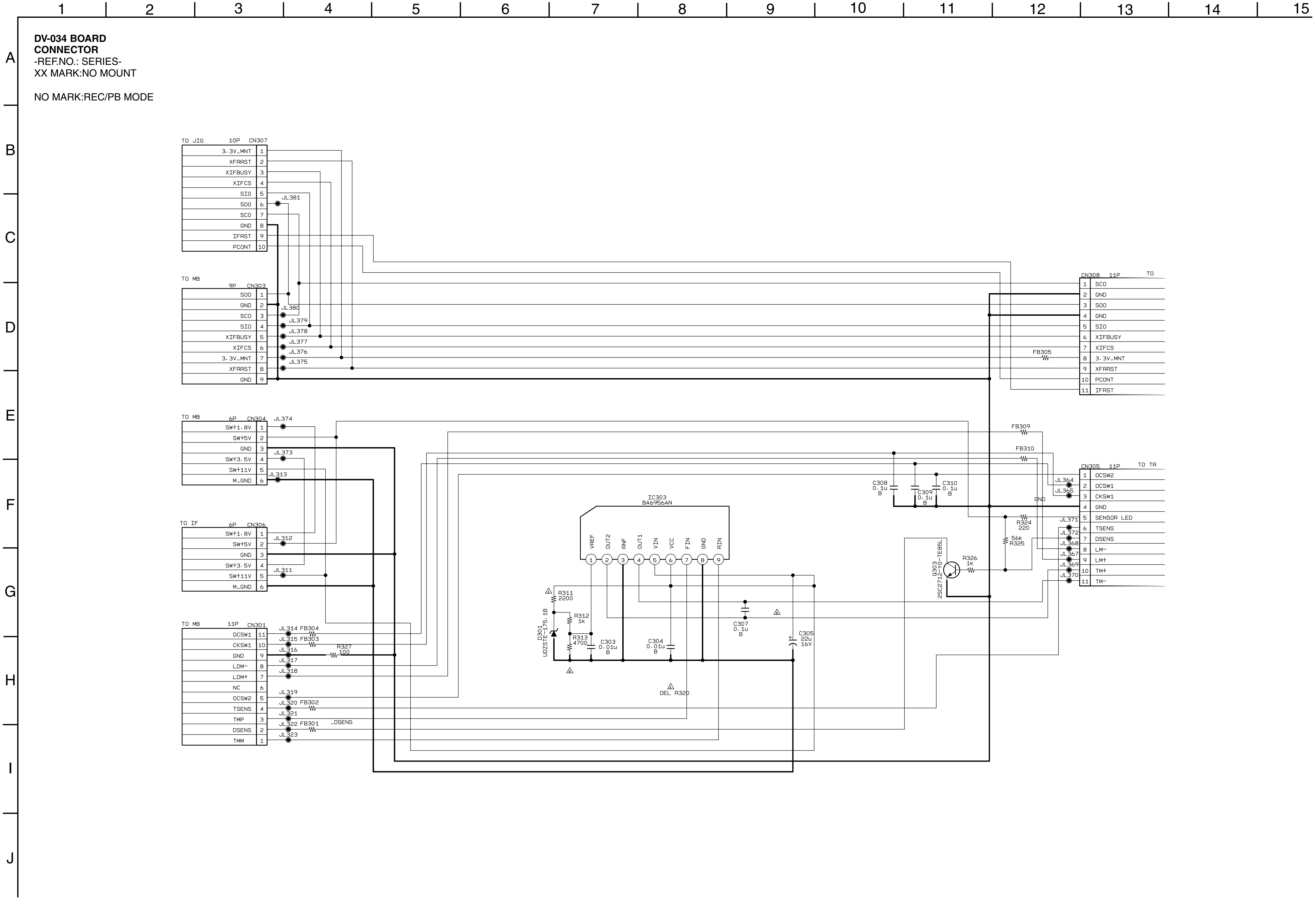
A SIDE		B SIDE	
IC303	B-4	IC303	B-1
		D301	B-2
		Q303	A-4

For Schematic Diagram

- Refer to page 4-51 for printed wiring board of DV-034 board.

DV-034 BOARD
CONNECTOR
-REF.NO.: SERIES-
XX MARK:NO MOUNT

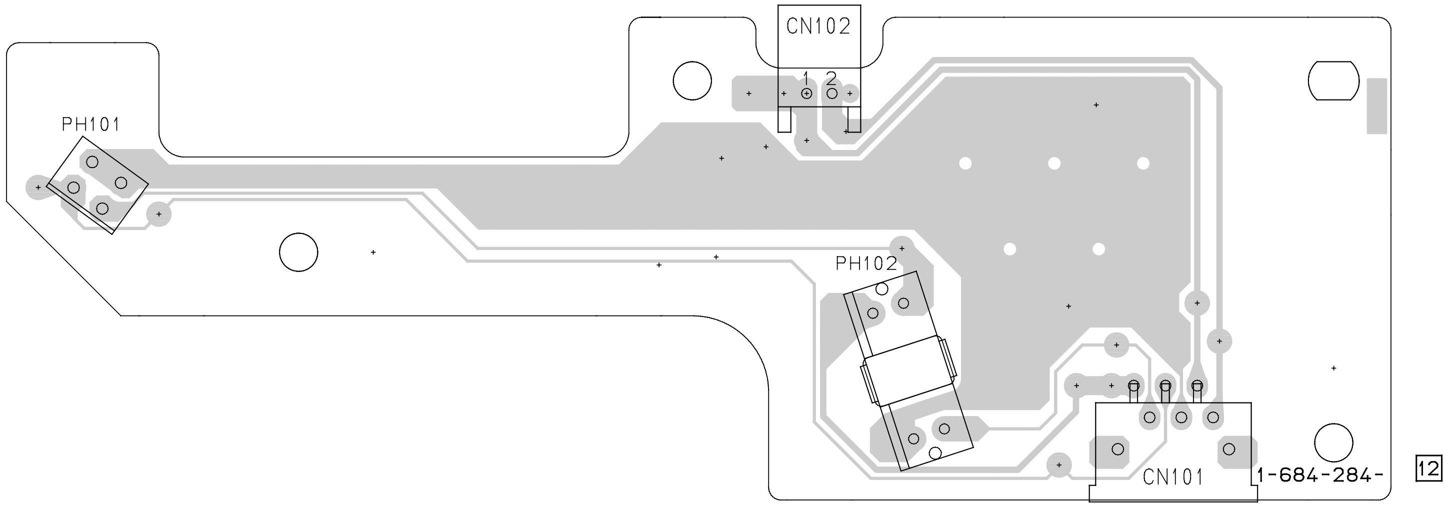
NO MARK:REC/PB MODE



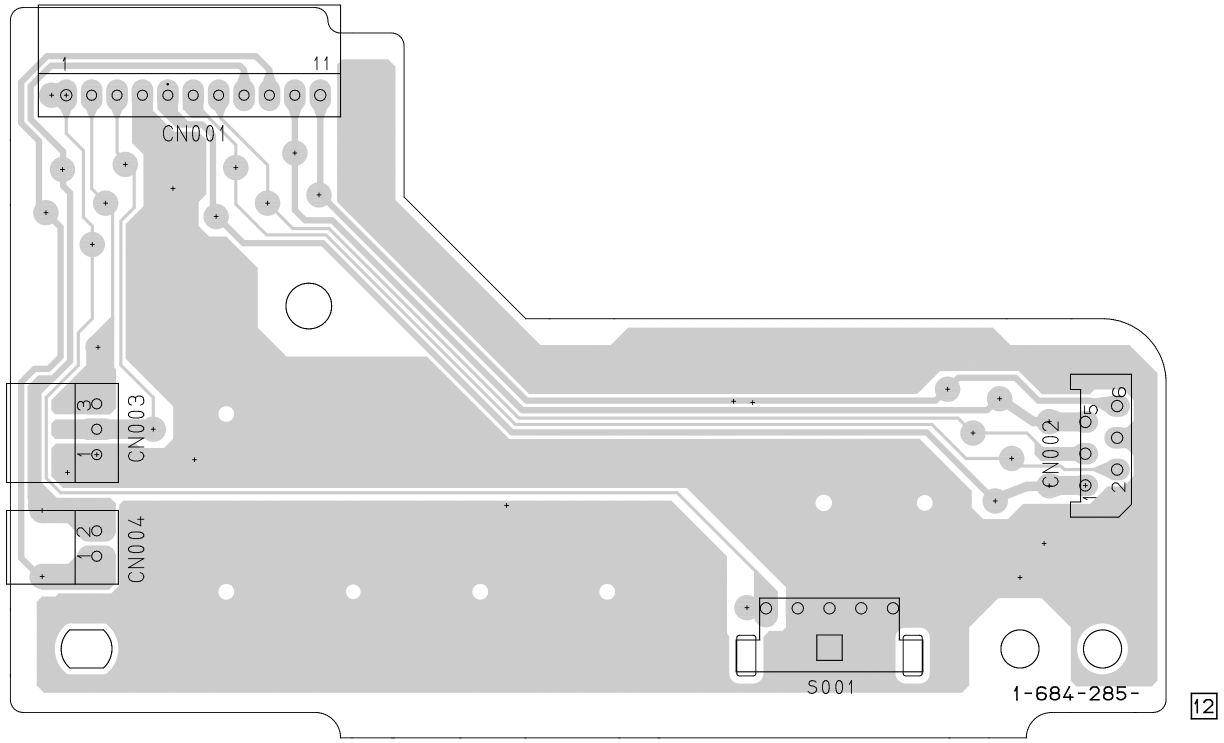
CONNECTOR
DV-034

SE-130 (SENSOR), MD-94 (MD INTERFACE) PRINTED WIRING BOARDS

SE-130 BOARD



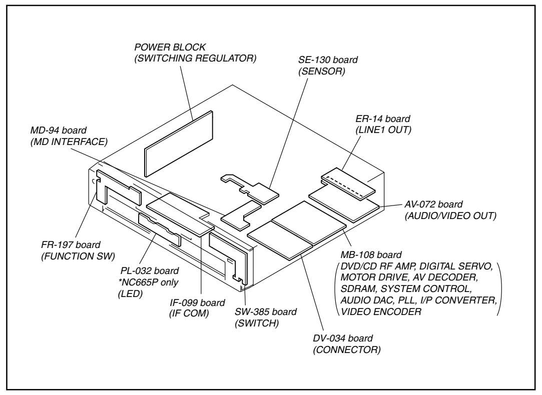
MD-94 BOARD



- 🄻🄵 : Uses unleaded solder.

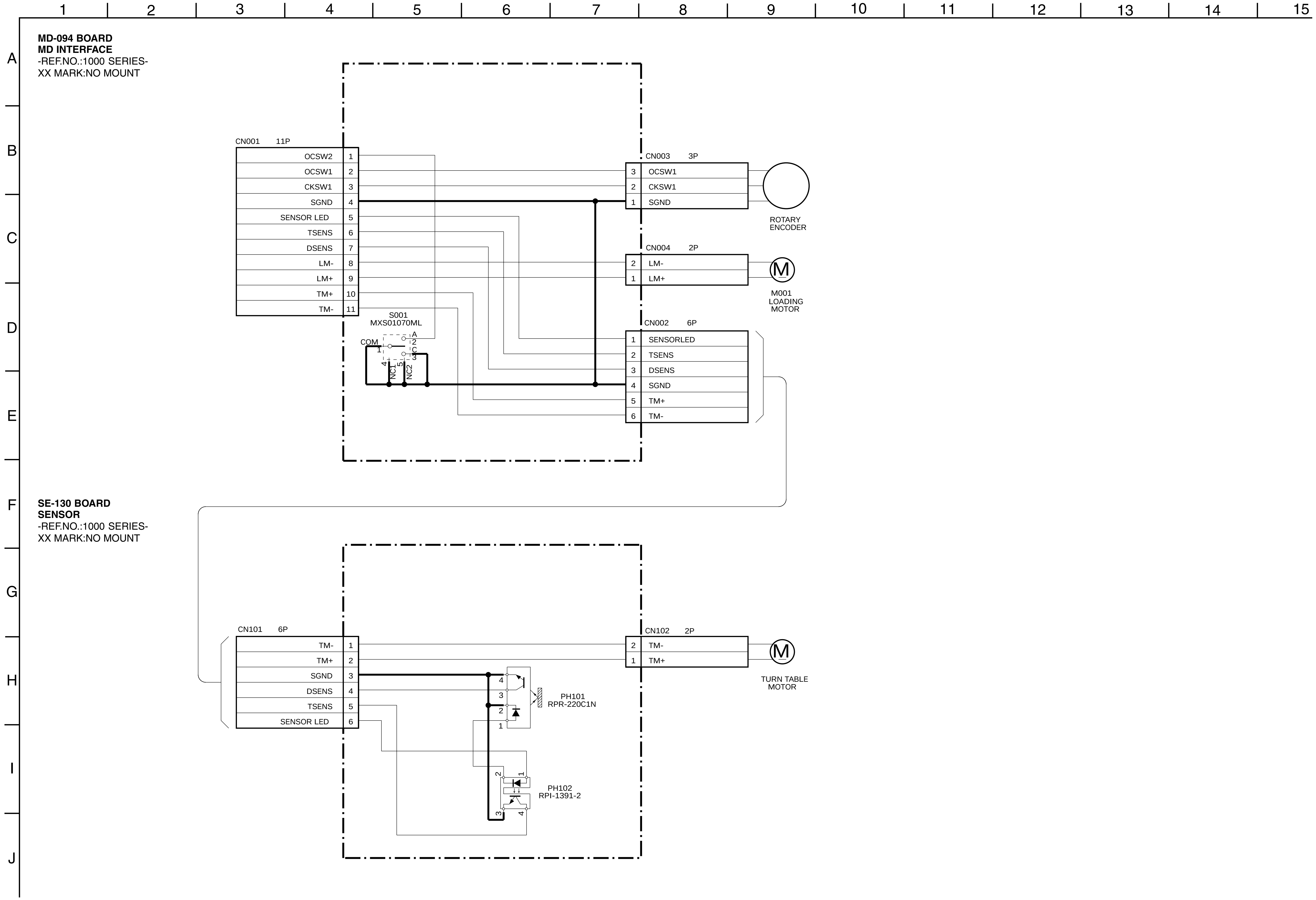
For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



For Schematic Diagram

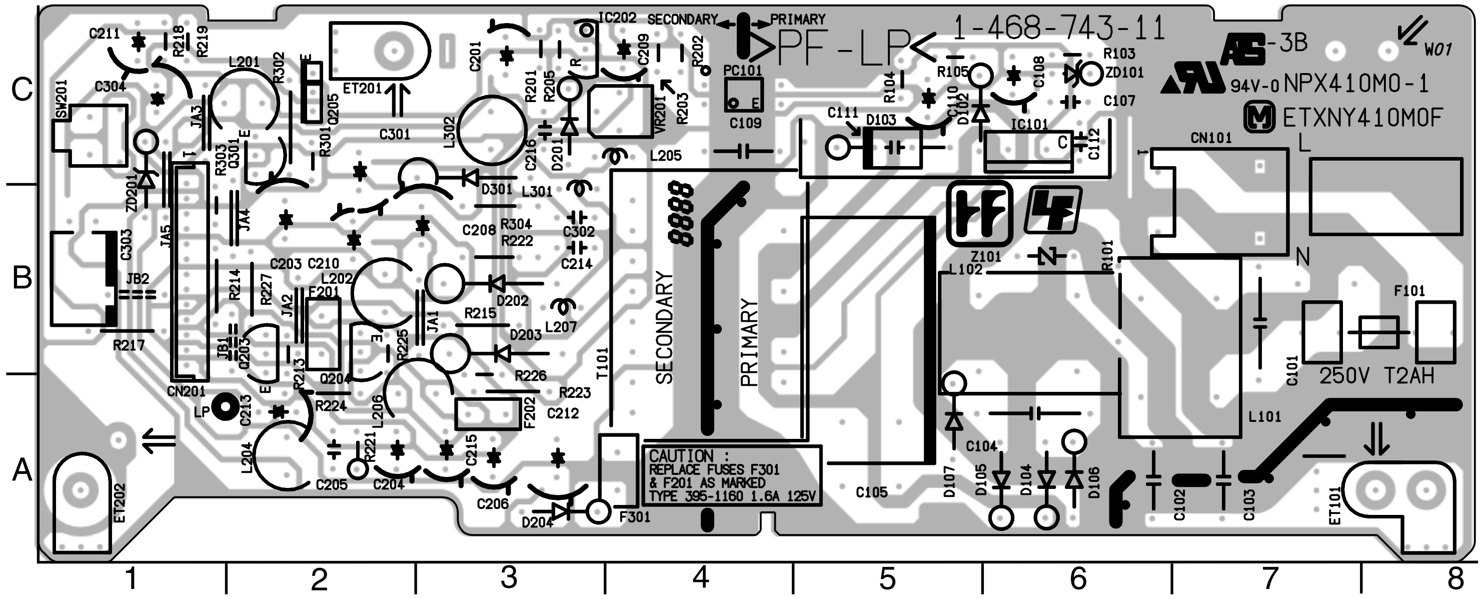
- Refer to page 4-55 for printed wiring boards of MD-094, SE-130 boards.



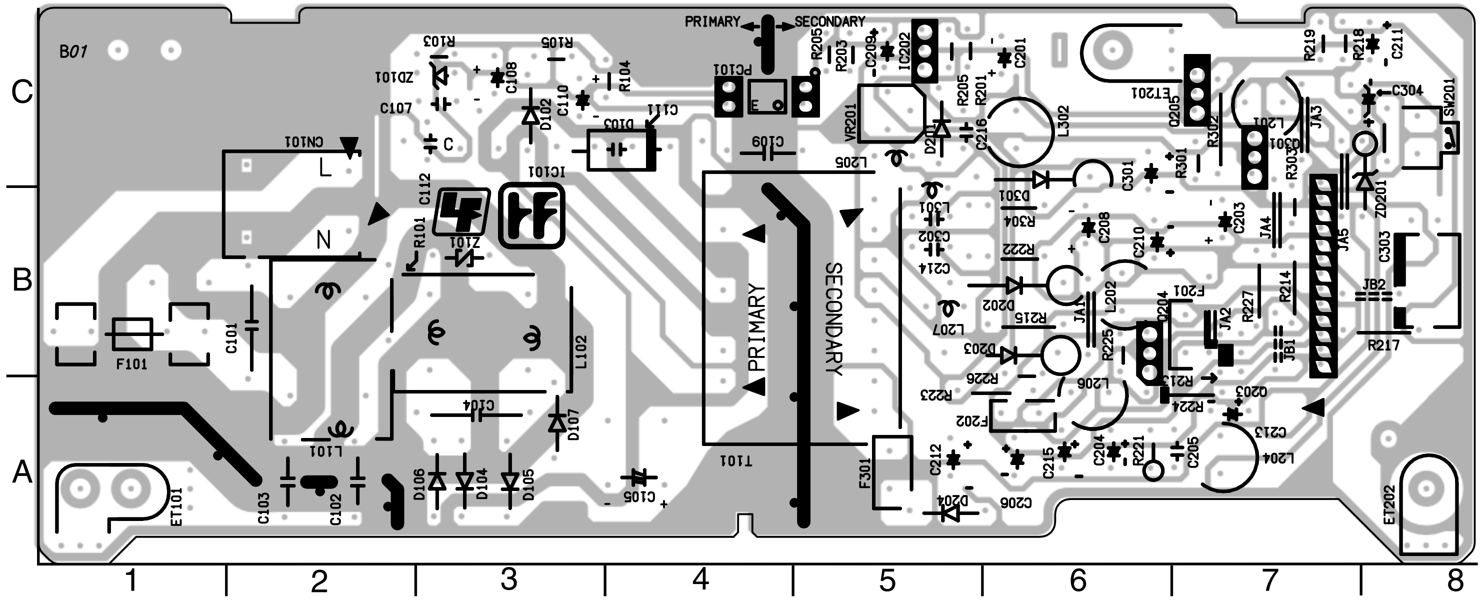
ETXNY410M0F (SWITCHING REGULATOR) PRINTED WIRING BOARD

- LF : Uses unleaded solder.

POWER BOARD (SW REG) SIDE A (ETXNY410M0F): (NC625: E,AEP,UK,SP,AUS)

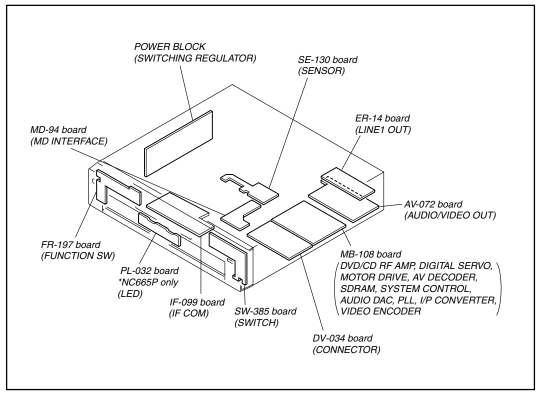


POWER BOARD (SW REG) SIDE B (ETXNY410M0F): (NC625: E,AEP,UK,SP,AUS)



For printed wiring board

There are a few cases that the part printed on this diagram isn’t mounted in this model.



POWER BLOCK (ETXNY410M0F)

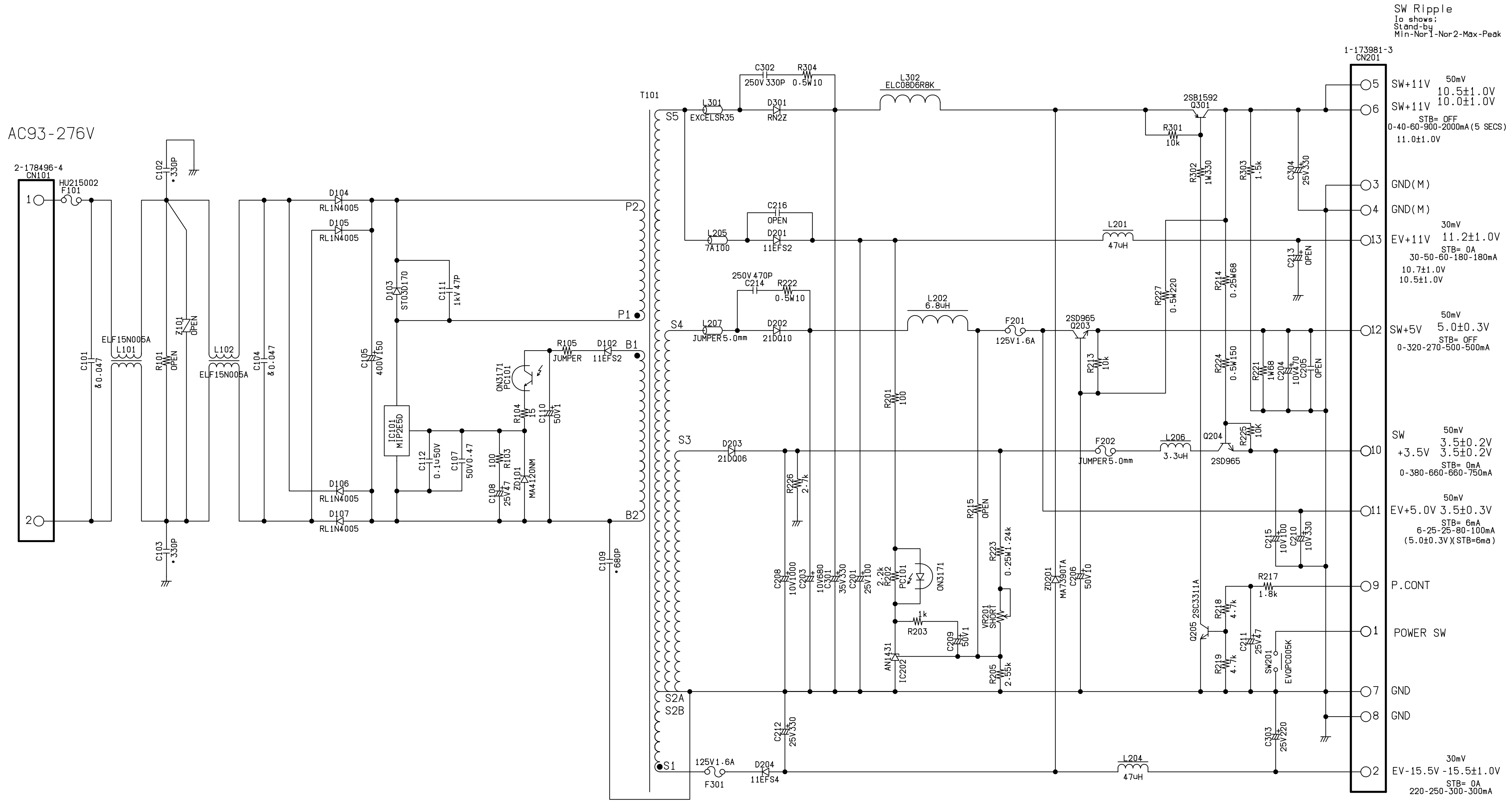
A SIDE		B SIDE	
IC101	C-6	IC101	C-3
IC202	C-4	IC202	C-5
Q203	B-2	Q203	A-7
Q204	A-2	Q204	B-6
Q205	C-2	Q205	C-7
Q301	C-2	Q301	C-7
D102	C-5	D102	C-3
D103	C-5	D103	C-4
D104	A-6	D104	A-3
D105	A-6	D105	A-3
D106	A-6	D106	A-3
D107	A-5	D107	A-3
D201	C-3	D201	C-5
D202	B-3	D202	B-6
D203	B-3	D203	B-5
D204	A-3	D204	A-5
D301	B-2	D301	B-6

For Schematic Diagram

- Refer to page 4-59 for printed wiring board of ETXNY410M0F board.

ETXNY410M0F BOARD
SW REG
-REF.NO.:5000 SERIES-
XX MARK:NO MOUNT

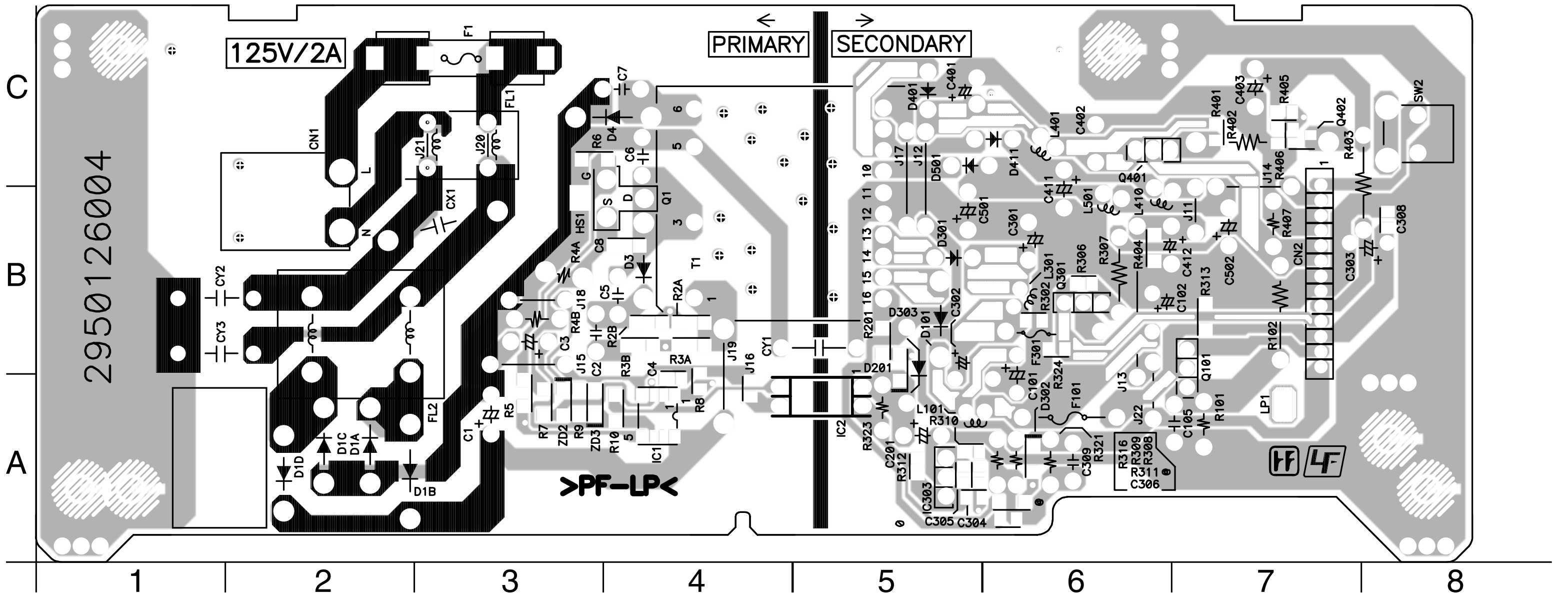
NO MARK:PB MODE



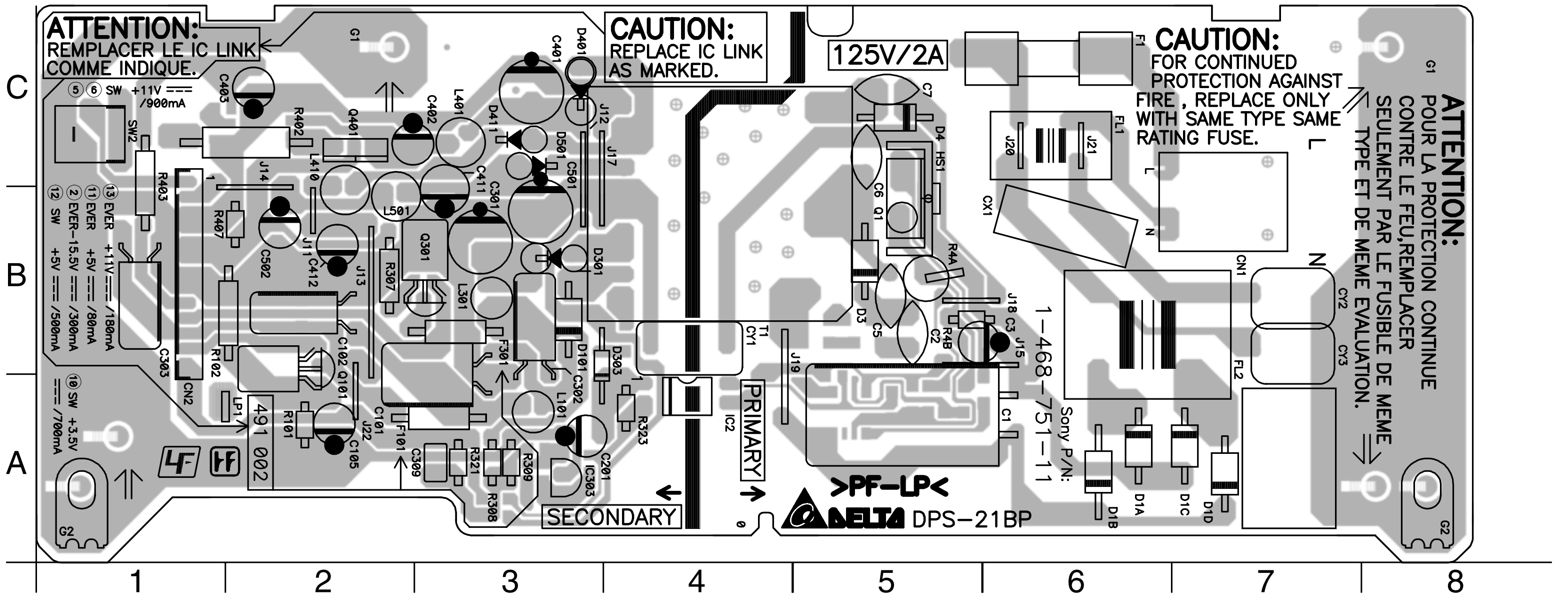
DPS-21BP (SWITCHING REGULATOR) PRINTED WIRING BOARD

- 🄻🄵 : Uses unleaded solder.

POWER BOARD (SW REG) SIDE A
(DPS-21BP): (NC625: US,CND,MX/NC665P: US,CND)

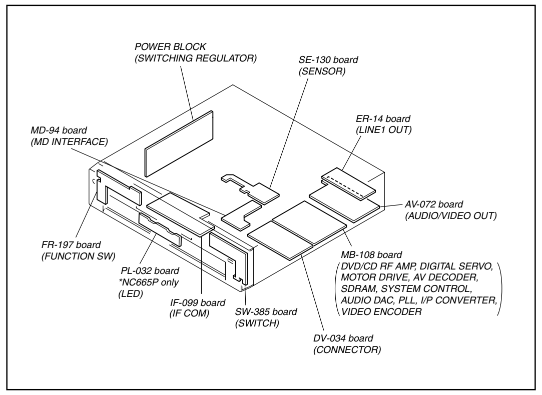


POWER BOARD (SW REG) SIDE B
(DPS-21BP): (NC625: US,CND,MX/NC665P: US,CND)



For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



POWER BLOCK (DPS-21BP)

A SIDE

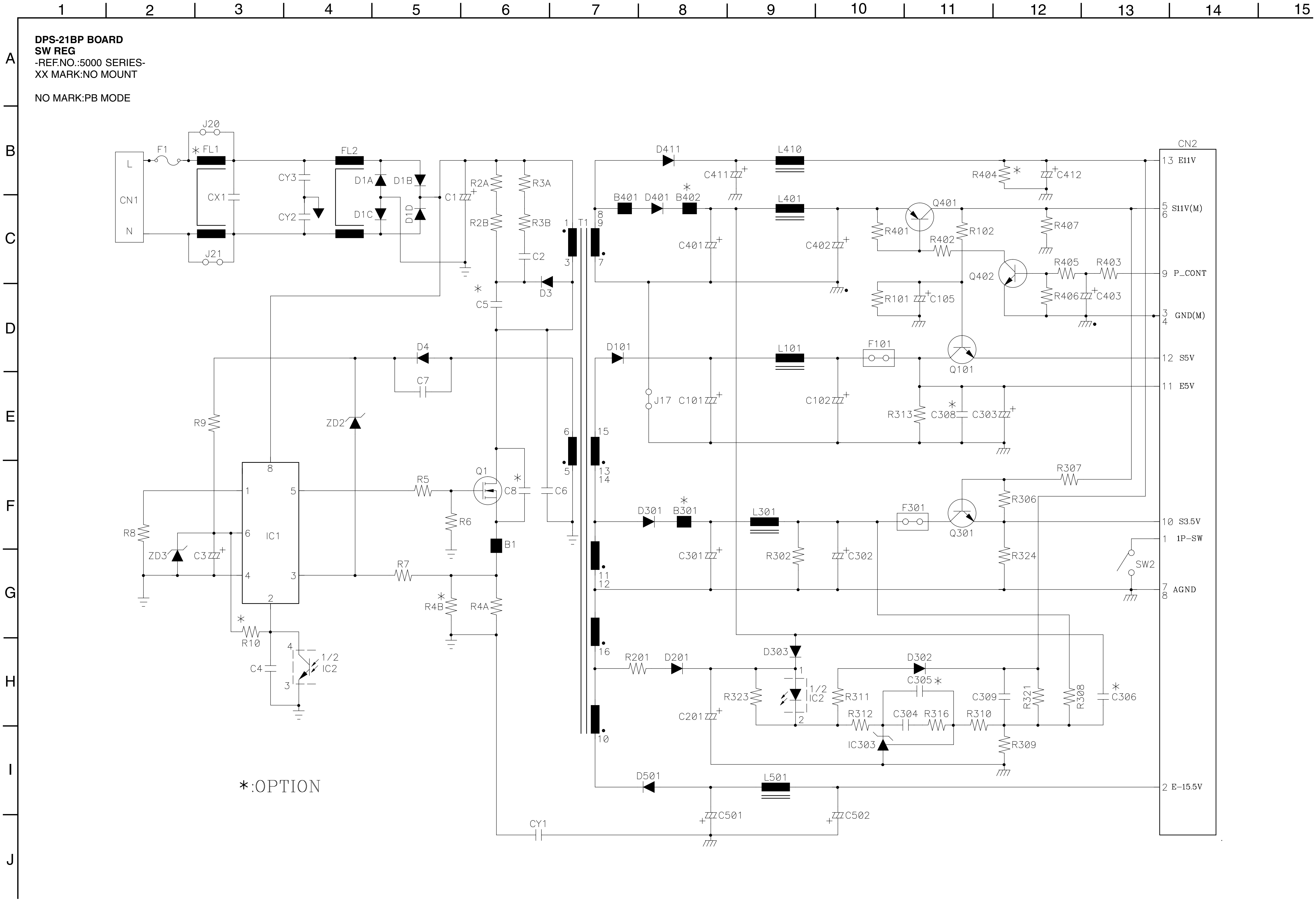
IC303	A-5
Q101	B-7
Q301	B-6
Q401	C-6
Q402	C-7
D101	B-5
D201	B-5
D301	B-5
D302	A-6
D303	B-5
D401	C-5
D411	C-6
D501	C-5

B SIDE

IC303	A-3
Q101	A-2
Q301	B-3
Q401	C-2
D101	B-3
D301	B-3
D303	B-4
D401	C-3
D411	C-3
D501	C-3

For Schematic Diagram

- Refer to page 4-63 for printed wiring board of DPS-21BP board.



DPS-21BP BOARD
SW REG
-REF.NO.:5000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE

*:OPTION

SW REG
POWER BLOCK (DPS-21BP)

SECTION 5
IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL PIN FUNCTION (MB-108 BOARD IC104: MB91307RPFV-G-BND-E1)

Pin No.	Pin Name	I/O	Function
1-5	HA17-HA21	O	Address bus A17 to A21
6	HA22	–	Not used
7	WP	O	I2C EEPROM write protect output
8	XSACS	–	Not used
9	AVCC	–	Power supply (+3.3 V)
10	AVRH	–	Reference power supply (+3.3 V)
11	AVSS	–	GND
12	AN0	I	Set of mode 0
13	AN1	I	Set of mode 1
14	AN2	I	Set of mode 2
15	AN3	I	Set of mode 3
16	INT0	I	AV DEC Interrupt input
17	INT1	I	ARP Interrupt input
18	INT2	I	SDSP Interrupt input
19	INT3	–	Not used
20	INT4	I	IF CON interrupt input
21	INT5	I	Table Int input
22	INT6	I	Table Int input
23	INT7	–	Not used
24	VCC	–	Power supply (+3.3 V)
25	SI0	I	Serial bus 0 (data input)
26	SO0	O	Serial bus 0 (data output)
27	SC0	O	Serial bus 0 (clock output)
28	SI1	–	Not used
29	SO1	O	Serial bus 1 (data output)
30	SC1	O	Serial bus 1 (clock output)
31	SI2	I	Serial bus 2 (data input)
32	SO2	O	Serial bus 2 (data output)
33	DSENS	I/O	Disc interrupt input
34	VSS	–	GND
35	XRST	O	System reset signal output
36	XARPRST	O	WIDE select signal output
37	RGBSEL	O	Video select signal output
38	SDA	I/O	I2C data input/output
39	SCL	O	I2C clock output
40	TRM +	O	Table drive output
41	EURO V/Y	O	Video select signal output
42	EXT	O	Line input select signal output
43	MD0	I	Input of mode select 0 (fixed at “H”)
44	MD1	I	Input of mode select 1 (fixed at “L”)
45	MD2	I	Input of mode select 2 (fixed at “L”)
46	DREQ0	I	Input of DMA-REQ 0 from AV DEC
47	DACK0	O	Output of DMA-ACK 0 to AV DEC
48	XDRVMUTE	O	Drive mute signal output
49	DREQ1	I	AV DEC DMA-REQ 1 input
50	DACK1	O	AV DEC DMA-ACK 1 output
51	XIFCS	O	IF CON chip select signal output
52	VSS	–	GND
53	X1	O	Clock output (16.5 MHz)
54	X0	I	Clock input (16.5 MHz)

Pin No.	Pin Name	I/O	Function
55	VCC	–	Power supply (+3.3 V)
56	CKSW1	I	Chuck sensor input
57	OCSW1	I	Tray sensor input
58	CS0X	O	External ROM chip select signal output
59	XRAMCS	O	External RAM chip select signal output
60	CS2X	O	AV DEC chip select signal output
61	CS3X	O	AV DEC chip select signal output
62	CS4X	O	ARP chip select signal output
63	CS5X	O	SDSP chip select signal output
64	VCCI	–	Power supply (+1.8 V)
65	CS6X	–	Not used
66	CX7X	–	Not used
67	XWAIT	I	Wait signal input
68	BGRNTX	I	Test terminal (fixed at “H”)
69	BRQ	I	Test terminal (fixed at “L”)
70	XRD	O	Read enable signal output
71	XWRH	O	High order byte write enable signal output
72	XWRL	O	Lower order-byte write enable signal output
73	NMIX	I	Not used (Fixed at “H”)
74	VCCI	–	Power supply (+1.8 V)
75	VSS	–	GND
76	XFRRST	I	IF CON reset signal input
77	CPUCK	O	CPU clock signal output
78	OCSW2	I	Tray sensor input
79	XDACS	O	DAC (2 CH) chip select signal output
80	TRM –	O	Motor drive output
81	48/44.1K	O	PLL FS control signal output
82	WIDE	O	LD mute signal output
83	MAMUTE	O	Audio mute signal output
84	SRAMWE	O	External RAM write enable signal output
85-92	HD0-HD7	I/O	Data bus D0 to D7 (16 bits only)
93-100	HD8-HD15	I/O	Data bus D8 to D15 (16 bits) and D0 - D7 (8 bits)
101	VSS	–	GND
102-109	HA0-HA7	O	Address bus A00 to A07
110	VCC	–	Power supply (+3.3 V)
111-118	HA8-HA15	O	Address bus A08 to A15
119	VSS	–	GND
120	HA16	O	Address bus A16

SECTION 6
TEST MODE

6-1. GENERAL DESCRIPTION

The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

6-2. STARTING TEST MODE

Press the TOP MENU, CLEAR, POWER keys on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then “DIAG START” will be displayed on the fluorescent display tube and the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed. Last Off at the lower right of screen indicates the information code concerning the last power off. To execute each function, select the desired menu and press its number on the remote commander. To exit from the Test Mode, press the POWER key.

```
              Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emargency History
5. Version Information
6. Video Level Adjustment
                          Exit: Power Key
_
Model      : DPX-17xxxx
Revision   : x.xxx             Last Off: xx
```

Power Off Information Code List

00: Primary Power Off
01: Power Off Request from SYSTEM CONTROL
02: Power Off by Emergency Power Off Command from SYSTEM CONTROL
(if information is sent from SYSTEM CONTROL)
03: IF CON Judged that SYSTEM CONTROL is Faulty
04: Power Off from Diagnosis Mode of IF CON
05: Forced Power Off by the User
06: Power Off by Power Supply Voltage Monitor

6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander. On the Test Mode Menu screen, press 0 key on the remote commander, and the following check menu will be displayed.

```
          ### Syscon Diagnosis ###
                        Check Menu
0 . Quit
1 . All
2 . Version
3 . Peripheral
4 . Servo
5 . Supply
6 . AV Decoder
7 . Video
8 . Audio
_
```

0. (Quit)

Quit the Syscon Diagnosis and return to the Test Mode Menu.

1. (All items continuous check)

This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.

```
          ### Syscon Diagnosis ###

               Diag All Check
               No. 2 Version

2-3. ROM Check Sum
Check Sum = 2005



Press NEXT Key to Continue
Press PREV key to Repeat
_
```

For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.
Following the message, press ▶▶I key to go to the next item, or I◀◀ key to repeat the same check again.

To quit the diagnosis and return to the Check Menu screen, press ■ or ENTER key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```
                ### Syscon Diagnosis ###


3-2. EEPROM Check
Error 03 : EEPROM Write/Read N
Address        :    00000001
Write Data     :    2492
Read Data      :    2490
Press NEXT Key to Continue
Press PREV key to Repeat
_
```

Press ■ key to quit the diagnosis, or |◀◀ key to repeat the same item where an error occurred, or ▶▶| key to continue the check from the item next to faulty item.

Selecting 2 and subsequent items call the submenu screen of each item. When "———" is displayed in the submenu, it means that the test is not supported in the model.

For example, if "5. Supply" is selected, the following submenu will be displayed.

```
                ### Syscon Diagnosis ###
                       Check Menu
                      No. 5 Supply
0. Quit
1. All
2. ARP Register Check
3. ARP to RAM Data Bus
4. ARP to RAM Address Bus
5. ARP RAM Check
_
```

0. (Quit)

Quit the submenu and return to the main menu.

1. (All submenu items continuous check.)

This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry.
Normally, all items are checked successively one after another automatically unless an error is found.
Selecting 2 and subsequent items executes respective menus and outputs the results.
For the contents of each submenu, see "General Description of Checking Method" and "Check Items List".

General Description of Checking Method

2. Version

(2-2) Revision
ROM revision number is displayed.
Error: Not detected.
The revision number defined in the source file is displayed with four digits.

(2-3) ROM Check Sum
Check sum is calculated.
Error: Not detected.
8-bit data are added up to the ROM address 0x000F0000 to 0x002EFFFF, and the result is displayed with 4-digit hexadecimal number. Error is not detected. Compare the result with the specified value.

(2-4) Model Type
Model code is displayed.
Error: Not detected.
The model code read from the EEPROM is displayed with 2-digit hexadecimal number.

(2-5) Region
Region code is displayed.
Error: Not detected.
The region code determined from the model code is displayed.

(2-6) M't Check
Mount resistance is checked.
Error 22: The region code does not accord.
Check whether the region code that is deduced from model resistance and destination resistance accords with the region code that is deduced from region resistance value.

3. Peripheral

(3-2) EEPROM Check
Data write → read, and accord check
Error 03: EEPROM write/read discord
0x9249, 0x2942 and 0x4294 are written to the address 0x00 to 0xFF of the EEPROM and then read for checking. Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

(3-6) Venc Check (NC665P only)
Data write → read, and accord check
Error: 52: Write/read data discord
Error may occur due to defect of access with syscon.

(3-8) External RAM Check (NC665P only)
Test Data write → read, and accord check
Error: 02: The external RAM used in the system control, is checked.

4. Servo

(4-2) Servo DSP Check
Data write → read, and accord check
Error 12: Read data discord
0x9249, 0x2942 and 0x4294 are written to the RAM address 0x602 of the Servo DSP and then read for checking.

(4-3) —————
Check no support.

(4-4) RF Amp Register Check
Data write → read, and accord check
Error 13: RF Amp register write, and read data discord
Implement 8-bit shift operation of the 0x01 to the readable/writable register of the RF Amp. If once write data do not accord with read data, it is NG.

5. Data Supply System

(5-2) ARP Register Check
Data write → read, and accord check
Error 08: ARP register write, and read data discord
Data 0x00 to 0xFF is written sequentially to the ARP TMAX register (address 0xC6) and then read for checking.

(5-3) ARP to RAM Data Bus
Data write → read, and accord check
Error 09: ARP ←→ RAM data bus error
Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus
Data write → other address read discord check
Error 10: ARP ←→ RAM address bus error
Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).
Before starting the test, all addresses of RAM (IC303) are cleared to 0x0000.
First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.
If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
             ### Syscon Diagnosis ###



5-4. ARP to RAM Address Bus
Error 10: ARP  -    RAM Address B
Address        :    0000A55A
Write Data     :    00000000
Read Data      :    00080000
Press NEXT Key to Continue
Press PREV key to Repeat
_
```

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

(5-5) ARP RAM Check
Data write → read, and accord check
Error 11: ARP RAM read data discord
The program code data stored in ROM are copied to all areas of RAM (IC303) connected to the ARP through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

6. AV Decoder

(6-2) 1935 RAM

Data write → read, and accord check

Error 14: AVD RAM read data discord

The program code data stored in ROM (IC107) are copied to all areas of RAM (IC504, IC505) connected to the AVD through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 14, and the test is suspended.

During the test, OSD display becomes blank as the OSD area is also checked.

(6-3) 1935 SP

ROM → AVD RAM → Video OUT

Error: Not detected.

The data including sub picture streams in ROM are transferred to the RAM in AVD, and output as video signals from the AVD.

Though OSD display becomes blank, the output of video signals continues until the key is pressed.

7. Video Output

(7-2) Color Bar

AVD color bar command write → Video OUT

Error: Not detected.

The command is transferred to the AVD, and the color bar signals are output from video terminals.

(7-3) Composite Out (European model only)

EURO-AV video output check

AVD color bar command write → Video (EURO-AV) OUT

Error: Not detected.

With the component of video output turned off, the color bar signals are output from the EURO-AV terminal.

This check is performed for European model only.

(7-4) Y/C Out (European model only)

Y/C video output check

AVD color bar command write → Video (Y/C) OUT

Error: Not detected.

With the Y/C of video output turned on, the color bar signals are output.

This check is performed for European model only.

(7-5) RGB Out (European model only)

RGB video output check

AVD color bar command write → Video (RGB) OUT

Error: Not detected.

With the RGB of video output turned on, the color bar signals are output.

This check is performed for European model only.

(7-6) Component Out (European model only)

Component video output check

AVD color bar command write → Video (Component) OUT

Error: Not detected.

With the component of video output turned on, the color bar signals are output.

This check is performed for European model only.

(7-7) Euro AV Through (European model only)

AV Through output On/Off

Error: Not detected.

AV Through output is turned on.

This check is performed for European model only.

8. Audio Output

(8-2) ARP →1935

Data flow from supply system DRAM to SDRAM of AV Decoder is tested.

Error 15: ARP → 1935 video NG
16: ARP → 1935 audio NG

(8-3) Test Tone

Pink noise output

Error: Not detected.

In the models without DD output, the test tone is output from L and R of 2-channel only, and in the models with DD output, the test tone is output from L and R of 2-channel, and all channels of 5.1 output.

After turning on all outputs, each time the NEXT key is pressed, the output channel is switched for individual channel checking.

Diagnosis Check Items List

2. Version Display
(2-2) Revision
(2-3) ROM Check Sum
(2-4) Model Type
(2-5) Region
(2-6) M't Check

3. Peripheral
(3-2) EEPROM Check
(3-6) Venc Check (NC655P only)
(3-7) ———— (Function not supported)
(3-8) External RAM Check (NC655P only)

4. Servo
(4-2) Servo DSP Check
(4-3) ———— (Function not supported)
(4-4) RF Amp Register Check

5. Data Supply System
(5-2) ARP Register Check
(5-3) ARP to RAM Data Bus
(5-4) ARP to RAM Address Bus
(5-5) ARP RAM Check

6. AV Decoder
(6-2) 1935 RAM
(6-3) 1935 SP

7. Video Output
(7-2) Color Bar
(7-3) Composite Out (European model only)
(7-4) Y/C Out (European model only)
(7-5) RGB Out (European model only)
(7-6) Component Out (European model only)
(7-7) Euro AV Through (European model only)

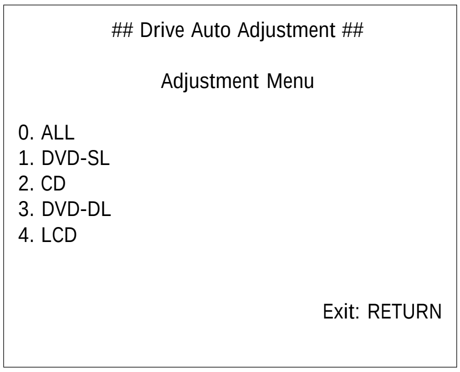
8. Audio Output
(8-2) ARP →1935
(8-3) Test Tone

Error Codes List

00: Error not detected
01: RAM write/read data discord
03: EEPROM NG
04: Flash memory clear error
05: Flash memory write error
06: Flash memory read data discord
08: ARP register read data discord
09: ARP ←→ RAM data bus error
10: ARP ←→ RAM address bus error
11: ARP RAM read data discord
12: Servo DSP NG
13: RF Amp NG
14: 1935 SDRAM NG
15: ARP →1935 video NG
16: ARP →1935 audio NG
1A: System call error (Function not supported)
1B: System call error (Parameter error)
1C: System call error (Illegal ID number)
20: System call error (Time out)
22: Resistor installation error
52: Video Encoder W/R NG
55: External RAM W/R NG
90: Error occurred
91: User verification NG
92: Diagnosis cancelled

6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press 1 key on the remote commander, and the drive auto adjustment menu will be displayed.



## Drive Auto Adjustment ##

Adjustment Menu

0. ALL
1. DVD-SL
2. CD
3. DVD-DL
4. LCD

Exit: RETURN

Normally, 0 is selected to adjust DVD (single layer), CD, and DVD (dual layer) in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen. Which disc is currently adjusted is displayed on the fluorescent display tube.

0. ALL

You will be asked if EEPROM data are initialized or not, and for this prompt, select 0 and press the ENTER key. First, the servo setting data in EEPROM, Emergency History and Hour Meter are cleared to initialize. Then, [1] DVD-SL disc, [2] CD disc, and [3] DVD-DL disc are adjusted in this order. Because the changer model can accept multiple discs in advance of adjustment, adjustments can be continued by exchanging discs automatically whenever an adjustment is completed following the instruction on screen. You can exit the adjustment by pressing the ■ button. In adjusting each disc, the mirror time is measured to check the disk type. In the auto adjustment, whether the disc type is correct is not checked unlike conventional models, and accordingly, take care not to insert a different type of disc.

1. DVD Single Layer Disc

Select 1, insert DVD single layer disc, and press ENTER key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM. The table No. 1 is used in the changer type model. If there is no disc on the table No. 1, the tray will be open to wait for closing. If there is a disc on the table, the adjustment starts immediately. If you put a disc prior to adjustment, confirm that the SL disc is set on the table 1.

DVD Single Layer Disc Adjustment Steps

1. Sled Reset
2. Disc Check Memory SL
3. Set Disc Type SL
4. Spdl Start
5. Ld ON
6. Focus Error Check
7. Focus ON 0 with PI Level measure
8. Auto Track Offset Adjust L0
9. Trv Level Check
10. Tracking ON
11. CLVA ON
12. Sled ON
13. Auto Focus Balance Adjust
14. Auto Loop Filter Offset Adjust
15. Auto Focus Gain Adjust L0
16. Auto Focus Balance Adjust L0
17. EQ Boost Adjust
18. Auto Loop Filter Offset Adjust
19. Auto Tracking Gain Adjust
20. RF Level Measure
21. Jitter measure
22. Eep Copy Loop Filter Offset
23. All Servo Stop

2. CD Disc

Select 2, insert CD disc, and press ENTER key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM. The table No. 2 is used in the changer type model. If there is no disc on the table No. 2, the tray will be open to wait for closing. If there is a disc on the table, the adjustment starts immediately. If you put a disc prior to adjustment, confirm that the CD is set on the table 2.

CD Adjustment Steps

1. Sled Reset
2. Disc Check Memory CD
3. Set Disc Type CD
4. Spdl Start
5. LD ON
6. Focus Error Check
7. Fcs ON 1 with PI Level measure
8. Auto Track Offset Adjust L0
9. Trv Level Check
10. Tracking ON
11. CLVA ON
12. Sled ON
13. Auto Focus Balance Adjust
14. Auto Loop Filter Offset Adjust
15. Auto Focus Gain Adjust L0
16. Auto Focus Balance Adjust L0
17. Eq Boost Adjust
18. Auto Loop Filter Offset Adjust
19. Auto Track Gain Adjust
20. Copy Adjustment Data to LCD
21. RF Level Measure
22. Jitter measure
23. All Servo Stop

3. DVD Dual Layer Disc

Select 3, insert DVD dual layer disc, and press ENTER key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM. The table No. 3 is used in the changer type model. If there is no disc on the table No. 3, the tray will be open to wait for closing. If there is a disc on the table, the adjustment starts immediately. If you put a disc prior to adjustment, confirm that the DL disc is set on the table 3.

DVD Dual Layer Disc Adjustment Steps

1. Sled Reset
2. Disc Check Memory DL
3. Set Disc Type DL
   DVD DL Layer 1 Adjust
4. Spdl Start
5. LD ON
6. Fcs ON 1 with PI Level measure
7. Auto Track Offset Adjust L1
8. Tracking ON
9. Clva ON
10. Sled ON
11. Auto Focus Balance Adjust
12. Auto Focus Gain Adjust L1
13. Auto Focus Balance Adjust L1
14. Eq Boost Adjust L1
15. Auto Track Gain Adjust L1
16. Jitter measure
    DVD DL Layer 0 Adjust
17. Focus Jump (L1 → L0)
18. Auto Track Offset Adjust L0
19. Tracking ON
20. Clva ON
21. Sled ON
22. Auto Focus Balance Adjust
23. Auto Focus Gain Adjust L0
24. Auto Focus Balance Adjust
25. Eq Boost Adjust L0
26. Auto Track Gain Adjust L0
27. Jitter measure
28. All Servo Stop

4. LCD

LCD disc is not adjusted because the adjusted data of CD are reflected, and SACD (hybrid disc) is not adjusted because the adjusted data of CD and DVD-DL are reflected.

6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select [2], and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.

```
          ## Drive Manual Operation ##

                 Operation Menu
1. Disc Type
2. Servo Control
3. Track/Layer Jump
4. Manual Adjustment
5. Auto Adjustment
6. Memory Check

0. Disc Check Memory

                                  Exit: RETURN
```

In using the Manual Operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type setting screen.
   The Disc Type setting must be performed after a disc was loaded.
   The set Disc Type is cleared when the tray is opened.
2. After power ON, if the Manual Operation was selected, first perform "Reset SLED TILT" by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the [■] button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

[POWER] : Power OFF
[■] : Servo stop
[⏏] (Open/Close) : Stop+Eject/Loading
[↩] : Return to Operation Menu or Test Mode Menu
[⏭], [⏮] : Transition between sub modes of menu
[1] to [9], [0] : Selection of menu and items
Cursor [↑]/[↓] : Increase/Decrease in manually adjusted value

0. Disc Check Memory

```
                  Disc Check


1. SL Disc Check
2. CD Disc Check
3. DL Disc Check




0. Reset SLED TILT
```

On this screen, the mirror time is measured and written to the EEPROM to check the disc type. First, set a DVD SL disc and press [1], then set a CD disc and press [2], and finally set a DVD DL disc and press [3]. The measured mirror time is displayed respectively.

The adjustment must be executed more than once after default data were written.

From this screen, you can go to another mode by pressing [⏭] or [⏮] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

1. Disc Type

```
                   Disc Type
1. Disc Type Auto Check
2. DVD SL                         12cm
3. DVD DL                         12cm
4. CD                             12cm
5. SACD                           12cm
6. DVD SL                         8cm
7. DVD DL                         8cm
8. CD                             8cm
9. LCD                            8cm
0. Reset SLED TILT
                                  EMG. 0R
```

On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry "Disc Check Memory". Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.

In performing manual operation, the disc type must be set.

Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.

```
                     Disc Type
1. Disc Type Auto Check
2. DVD SL              12cm
3. DVD DL              12cm
4. CD                  12cm
5. SACD                12cm
6. DVD SL              8cm
7. DVD DL              8cm
8. CD                  8cm
9. LCD                 8cm
0. Reset SLED TILT
                        SA.—— SI.— EMG.00
DVD SL 12cm
```

Display when DVD SL 12cm disc was selected

```
                     Disc Type
1. Disc Type Auto Check
2. DVD SL              12cm
3. DVD DL              12cm
4. CD                  12cm
5. SACD                12cm
6. DVD SL              8cm
7. DVD DL              8cm
8. CD                  8cm
9. LCD                 8cm
0. Reset SLED TILT
                           TC.—:–:— EMG.00
CD                     12cm
```

Display when CD 12cm disc was selected

0 Reset SLED TILT:	Reset the Sled and Tilt to initial position. (Reset the Sled only to initial position because the Tilt mechanism is not available in this model.)
1 Disc Type Check:	Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct. If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD).
2 to 9:	Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if 1 was selected.

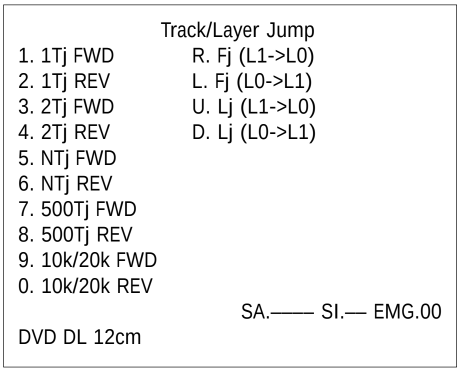
2. Servo Control

```
                 Servo Control
1. LD               Off      R. Sled FWD
2. SP               Off      L. Sled REV
3. Focus            Off
4. TRK.             Off
5. Sled             Off
6. CLVA             Off
7. FCS. Srch        Off


0. Reset SLED TILT
                        SA.—— SI.— EMG.00
DVD SL 12cm
```

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked.
The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

0 Reset SLED TILT:	Reset the Sled and Tilt to initial position. (Reset the Sled only to initial position because the Tilt mechanism is not available in this model.)
1 LD:	Turn ON/OFF the laser.
2 SP:	Turn ON/OFF the spindle.
3 Focus:	Search the focus and turn on the focus.
4 TRK.:	Turn ON/OFF the tracking servo.
5 Sled:	Turn ON/OFF the sled servo. When PLL is not locked (cannot be locked), the sled servo is not turned ON. The display keeps ON.)
6 CLVA:	Turn ON/OFF normal servo of spindle servo.
7 FCS. Srch:	Apply same voltage as that of focus search to the focus drive to check the focus drive system.
→ Sled FWD:	Move the sled outward. Perform this operation with the tracking servo turned off.
← Sled REV:	Move the sled inward. Perform this operation with the tracking servo turned off.

3. Track/Layer Jump



```
                 Track/Layer Jump
1. 1Tj FWD          R. Fj (L1->L0)
2. 1Tj REV          L. Fj (L0->L1)
3. 2Tj FWD          U. Lj (L1->L0)
4. 2Tj REV          D. Lj (L0->L1)
5. NTj FWD
6. NTj REV
7. 500Tj FWD
8. 500Tj REV
9. 10k/20k FWD
0. 10k/20k REV
                         SA.—— SI.— EMG.00
DVD DL 12cm
```

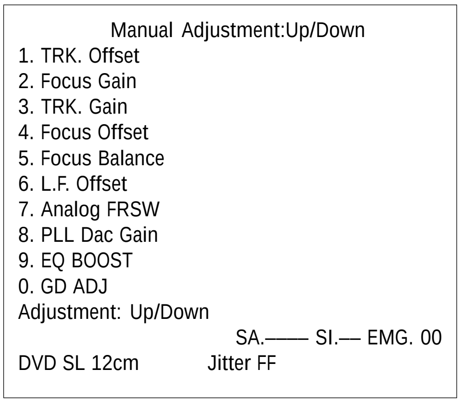
On this screen, track jump, etc. can be performed. Only for the DVD-DL, the focus jump and layer jump are displayed in the right field.

$\boxed{1}$ 1Tj FWD:	1-track jump forward.
$\boxed{2}$ 1Tj REV:	1-track jump reverse.
$\boxed{3}$ 2Tj FWD:	2-track jump forward.
$\boxed{4}$ 2Tj REV:	2-track jump reverse.
$\boxed{5}$ NTj FWD:	N-track jump forward.
$\boxed{6}$ NTj REV:	N-track jump reverse.
$\boxed{7}$ 500Tj FWD:	Fine search forward.
$\boxed{8}$ 500Tj REV:	Fine search reverse.
$\boxed{9}$ 10k/20k FWD:	Direct search forward.
$\boxed{0}$ 10k/20k REV:	Direct search reverse.

– The following commands are valid for DVD-DL disc only –

$\boxed{\rightarrow}$ (L1 → L0): Focus jump (Trk/Sled Servo OFF) forward.
$\boxed{\leftarrow}$ (L0 → L1): Focus jump (Trk/Sled Servo OFF) reverse.
$\boxed{\uparrow}$ (L1 → L0): Layer jump (Trk/Sled Servo ON) forward.
$\boxed{\downarrow}$ (L0 → L1): Layer jump (Trk/Sled Servo ON) reverse.

4. Manual Adjustment

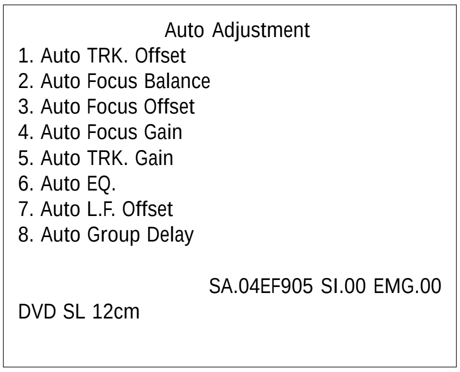


```
         Manual  Adjustment:Up/Down
1. TRK. Offset
2. Focus Gain
3. TRK. Gain
4. Focus Offset
5. Focus Balance
6. L.F. Offset
7. Analog FRSW
8. PLL Dac Gain
9. EQ BOOST
0. GD ADJ
Adjustment:  Up/Down
                         SA.—— SI.— EMG. 00
DVD SL 12cm          Jitter FF
```

On this screen, each item can be adjusted manually. Select the desired number $\boxed{1}$ to $\boxed{0}$ from the remote commander, and current setting for the selected item will be displayed, then increase or decrease numeric value with $\boxed{\uparrow}$ key or $\boxed{\downarrow}$ key. This value is stored in the EEPROM. If CLV has been applied, the jitter is displayed for reference for the adjustment.

$\boxed{1}$ TRK. Offset:	Adjusts tracking offset.
$\boxed{2}$ Focus Gain:	Adjusts focus gain.
$\boxed{3}$ TRK. Gain:	Adjusts track gain.
$\boxed{4}$ Focus Offset:	Adjusts focus offset.
$\boxed{5}$ Focus Balance:	Adjusts focus balance.
$\boxed{6}$ L.F. Offset:	Adjusts loop filter offset.
$\boxed{7}$ Analog FRSW:	Sets select switch of analog feedback circuit.
$\boxed{8}$ PLL Dac Gain:	Adjusts D/A converter gain of PLL.
$\boxed{9}$ EQ BOOST:	Adjusts boost amount of equalizer.
$\boxed{0}$ GD ADJ:	Adjusts group delay amount.

5. Auto Adjustment



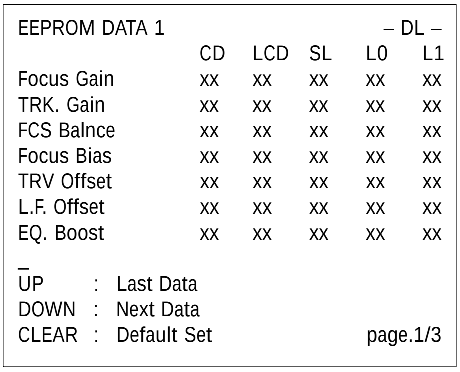
```
                    Auto Adjustment
1. Auto TRK. Offset
2. Auto Focus Balance
3. Auto Focus Offset
4. Auto Focus Gain
5. Auto TRK. Gain
6. Auto EQ.
7. Auto L.F. Offset
8. Auto Group Delay

                      SA.04EF905 SI.00 EMG.00
DVD SL 12cm
```

On this screen, each item can be adjusted automatically. Select the desired number [1] to [8] from the remote commander, and selected item is adjusted automatically.

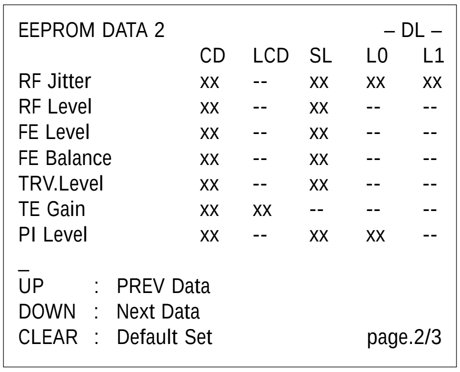
[1] Auto TRK. Offset:	Adjusts tracking offset.
[2] Auto Focus Balance:	Adjusts focus balance.
[3] Auto Focus Offset:	Adjusts focus offset.
[4] Auto Focus Gain:	Adjusts focus gain.
[5] Auto TRK. Gain:	Adjusts track gain.
[6] Auto EQ	
[7] Auto L.F. Offset:	Adjusts loop filter offset.
[8] Auto Group Delay	

6. Memory Check

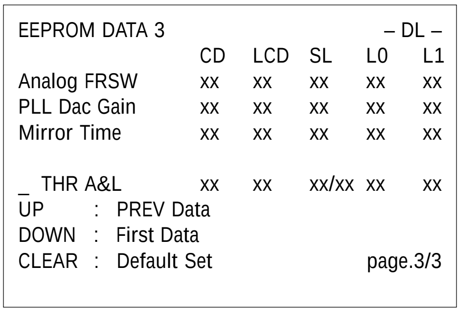
The display image is shown below and three screens in total can be selected.



```
EEPROM DATA 1                               – DL –
                   CD    LCD   SL     L0     L1
Focus Gain         xx    xx    xx     xx     xx
TRK. Gain          xx    xx    xx     xx     xx
FCS Balnce         xx    xx    xx     xx     xx
Focus Bias         xx    xx    xx     xx     xx
TRV Offset         xx    xx    xx     xx     xx
L.F. Offset        xx    xx    xx     xx     xx
EQ. Boost          xx    xx    xx     xx     xx
_
UP      :  Last Data
DOWN    :  Next Data
CLEAR   :  Default Set                  page.1/3
```



```
EEPROM DATA 2                               – DL –
                   CD    LCD   SL     L0     L1
RF Jitter          xx    --    xx     xx     xx
RF Level           xx    --    xx     --     --
FE Level           xx    --    xx     --     --
FE Balance         xx    --    xx     --     --
TRV.Level          xx    --    xx     --     --
TE Gain            xx    xx    --     --     --
PI Level           xx    --    xx     xx     --
_
UP      :  PREV Data
DOWN    :  Next Data
CLEAR   :  Default Set                  page.2/3
```



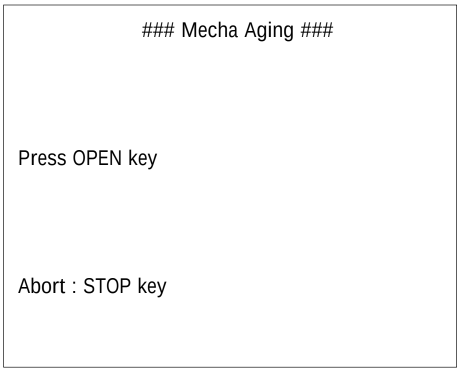
```
EEPROM DATA 3                               – DL –
                   CD    LCD   SL     L0     L1
Analog FRSW        xx    xx    xx     xx     xx
PLL Dac Gain       xx    xx    xx     xx     xx
Mirror Time        xx    xx    xx     xx     xx

_  THR A&L         xx    xx    xx/xx  xx     xx
UP      :  PREV Data
DOWN    :  First Data
CLEAR   :  Default Set                  page.3/3
```

On this screen, current servo adjusted data stored in the EEPROM are displayed. The adjusted data are initialized by pressing the CLEAR key, but be careful that they are not recoverable after initialization.

Before clearing the adjusted data, make a note of the set data. This screen will also appear if [0] All is selected in the Drive Auto Adjustment. In this case, default setting cannot be made.

“THR A&L” data on the second page cannot be changed if default setting is once made.

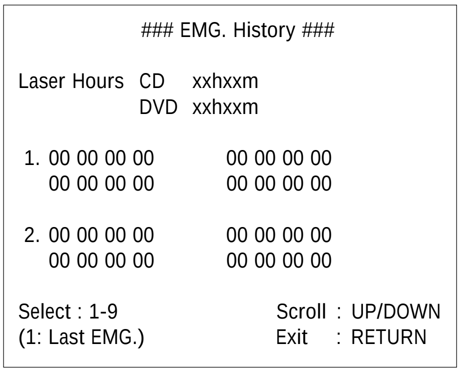
6-6. MECHA AGING



```
              ### Mecha Aging ###



Press OPEN key




Abort : STOP key
```

On the Test Mode Menu screen, selecting [3] executes the aging of mechanism. First, open the tray and load a disc. Press the [▷] key, and the aging will start. During aging, the number of the repeat cycle is displayed. Aging can be aborted at any time by pressing the [■] key. After the operation has stopped, unload the disc and press again the [■] key or the [⤺] key to return to the Test Mode Menu.

6-7. EMERGENCY HISTORY



```
               ### EMG. History ###

Laser Hours  CD    xxhxxm
             DVD   xxhxxm

 1. 00 00 00 00          00 00 00 00
    00 00 00 00          00 00 00 00

 2. 00 00 00 00          00 00 00 00
    00 00 00 00          00 00 00 00

Select : 1-9                  Scroll  :  UP/DOWN
(1: Last EMG.)                Exit    :  RETURN
```

On the Test Mode Menu screen, selecting [4] displays the information such as servo emergency history. The history information from last "1" up to "10" can be scrolled with [↑] key or [↓] key. Also, specific information can be displayed by directly entering that number with the ten-key pad from [1] to [9].
(Emergency history code is shown separately.)
The upper two lines display the laser ON total hours. Data below minutes are omitted.

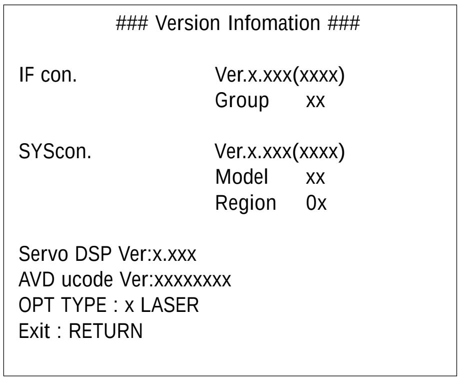
Clearing History Information

◎ Clearing laser hours
  Press [DISPLAY] and [CLEAR] keys in this order.
  Both CD and DVD data are cleared.

◎ Clearing emergency history
  Press [TOP MENU] and [CLEAR] keys in this order.

◎ Initializing setup data
  Press [MENU] and [CLEAR] keys in this order.
  The data have been initialized when "Set Up Initialized" message is displayed.
  The EMG. History display screen will be restored soon.

6-8. VERSION INFORMATION



```
            ### Version Infomation ###

IF con.                  Ver.x.xxx(xxxx)
                         Group      xx

SYScon.                  Ver.x.xxx(xxxx)
                         Model      xx
                         Region     0x

Servo DSP Ver:x.xxx
AVD ucode Ver:xxxxxxxx
OPT TYPE : x LASER
Exit : RETURN
```

The ROM version, region code, OPT type, etc. are displayed if [5] is selected in the Test Mode Menu. The parenthesized hexadecimal number in the version number field indicates the checksum value of the ROM.

∗ Note after Downloading
After downloading ROM data, sometimes it happens that checksum is not the same as that of ROM data that has been downloaded.
In such a case, go back to the menu screen and select "0. Syscon Diagnosis", then select "1. All" in "2. Version". If the result of this operation does not give an agreement, it must be either Download error or ROM error.

6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting [6] displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

6-10. IF CON SELF DIAGNOSTIC FUNCTION

1. IF-99 BOARD (IF CON) TEST MODE

The front board test mode is the IF CON self diagnostic mode. The IF CON can diagnose the functions of the front panel boards that the IF CON controls. Normally, the IF CON makes a serial communication with the SYSTEM CONTROL and operates following he commands from the SYSTEM CONTROL, but in the Test mode, the IF CON operates independently from the SYSTEM CONTROL.

In the Test mode, the following functions can be checked.

1. Button function
2. Remote commander receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Click shuttle function
5. Fluorescent display tube lighting check
   Grid check
   Anode check
6. LED control function

In the Test mode, the set operates same as usual, except voltage monitoring, communication monitoring, display of fluorescent display tube, and LED control.

1. The routine that monitors +3.3 V (P-CONT) of MB-108 board is not provided.
2. The monitoring timer for serial communication with the SYSTEM CONTROL is not provided. The set is not placed in the Standby mode, even if the communication with SYSTEM CONTROL is normal.
3. Display of fluorescent display tube (normally, display is made following the commands from SYSTEM CONTROL)
4. LED control (normally, control is made following the commands from SYSTEM CONTROL)

2. OPERATION OF SELF CHECK MODE

The Self Check mode is the function to conduct the basic test to the FL display and DVD panel section.

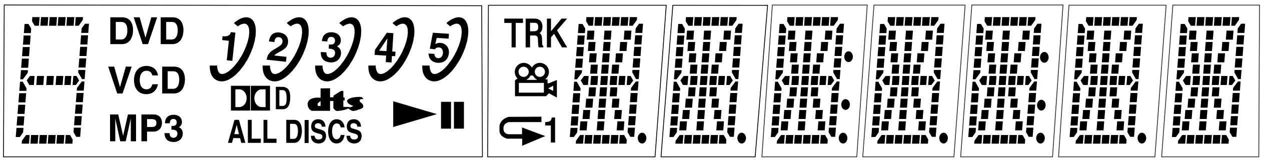
2-1. Self Check Mode Transition Processing

At the AC Power ON after IF CON (IC404) was reset, the input to 10pin (SELF CHECK) is judged and if “Low” is entered, the main unit transits to the Self Check mode. In this port input judgment, the result of 3-time attempts must be same (assuming that the MB-103 board are not connected). While pressing the STOP key on the main unit with the IF CON in STANDBY mode, enter RETURN → DISPLAY on the remote commander, and the unit transits to the Self Check Mode. The Self Check mode terminates when the IF CON transits to the STANDBY mode.

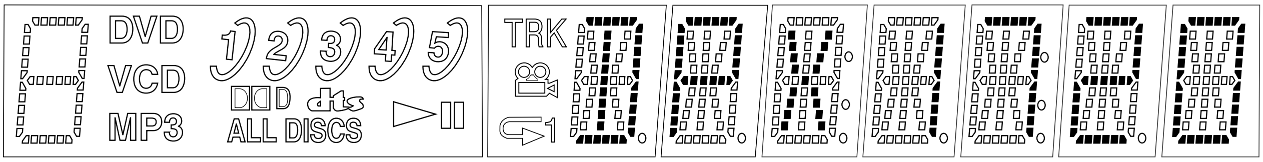
2-2. Operation of Auto Self Check

When the Self Check mode becomes active at the AC Power ON or by key input, the test display of the following steps (1) to (4) is repeated.

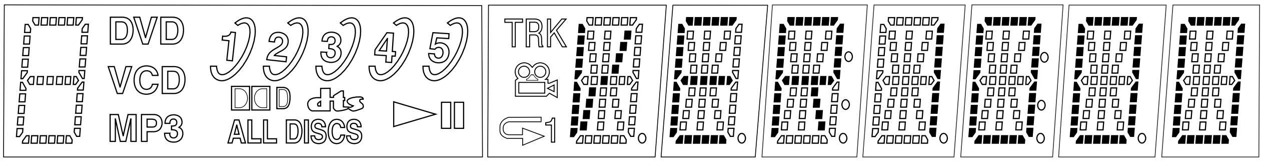
(1) FLD and LED all ON (for 5 seconds)



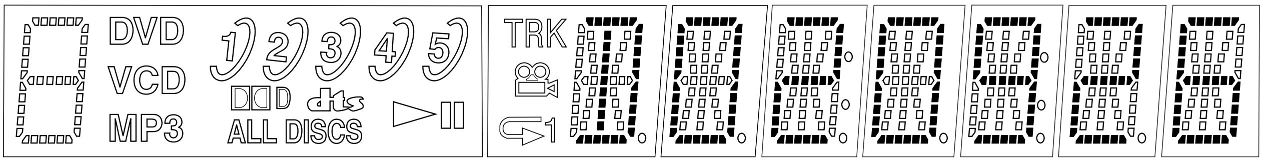
(2) MODEL display (for 2 seconds)



(3) Version display (for 2 seconds)



(4) ROM creation date display (for 2 seconds)



2-3. Each Self Check Function

Each Self Check function tests the FLD display, LED display, and key input.

Input Voltage [V]	IC404: Pin No. (Signal)			
	Pin ㉞ (AD1)	Pin ㉟ (AD2)	Pin ㊱ (AD3)	Pin ㊲ (AD4)
0 – 0.21	PLAY	OPEN/CLOSE	POWER	LOAD
0.63 – 0.86	PAUSE	EXCHANGE	DISC 5	1/ALL
1.23 – 1.55	STOP	DISC SKIP	DISC 4	PREQ
1.9 – 2.25	PREV	PROG SEL*	DISC 3	TVS
2.63 – 2.86	NEXT	–	DISC 2	DISC 1
5.0	–	–	–	–

Vref = 3.5V

* : NC665P only

2-3-1. FLD and LED All ON

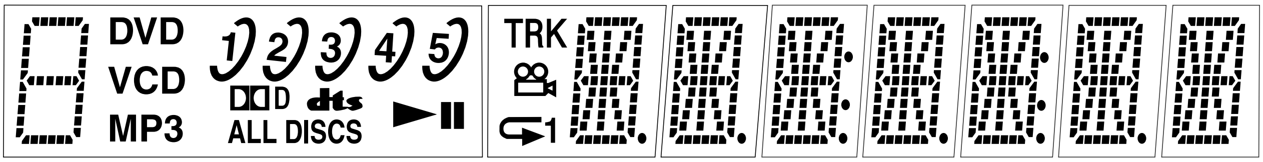
2-3-1-1.Transition Keys in Self Check Mode

- STOP key and OPEN/CLOSE key on the main unit
- LEFT key on the main unit and the remote commander

2-3-1-2. Operation and Display

In this mode, all LEDs except STANDBY LED and all segments of FLD turn ON.

Example of FLD all ON



2-3-2. Main Unit Key Name Display and Key Code Display

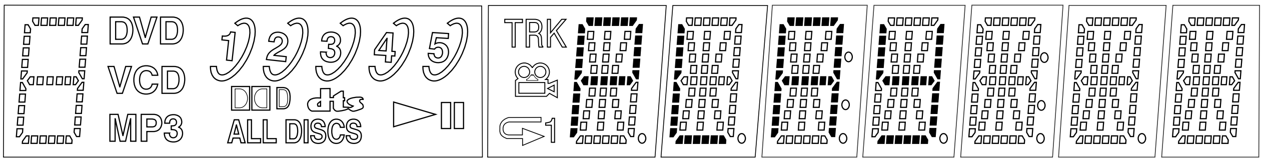
2-3-2-1. Transition Keys in Self Check Mode

- Keys on main unit except keys transited in self check

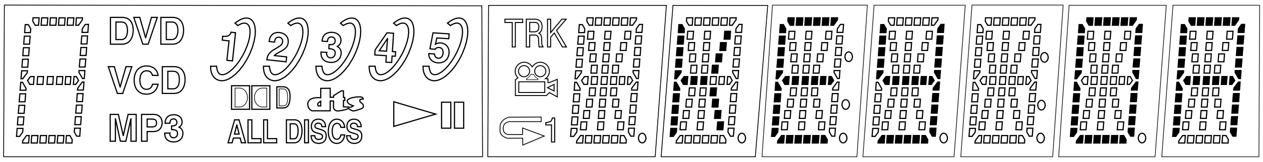
2-3-2-2. Operation and Display

When a key on the main unit is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the DISPLAY key on the remote commander. "NOTHING" is displayed when nothing is entered. Also, VCD, DVD, and CD segments turn on when a communication error occurred.

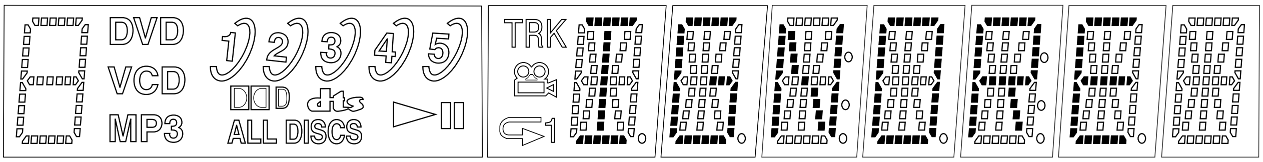
FLD display (at input of PLAY key on the main unit)



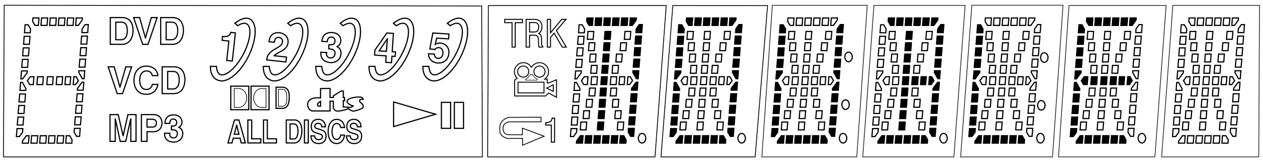
Key code display (at input of PLAY key, Key code: 0Ah)



At input of faulty voltage



When two keys are pressed



2-3-3. Remote Commander Key Name Display and Key Code Display

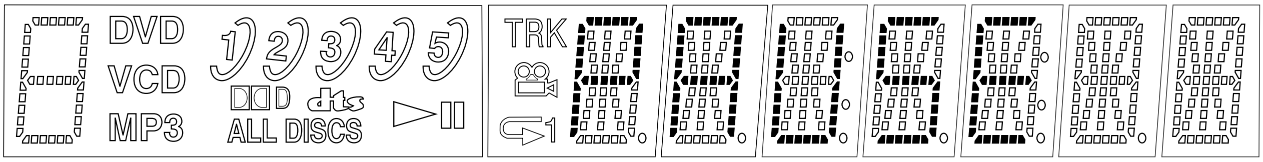
2-3-3-1. Transition Keys in Self Check Mode

Remote commander keys except keys transited in self check

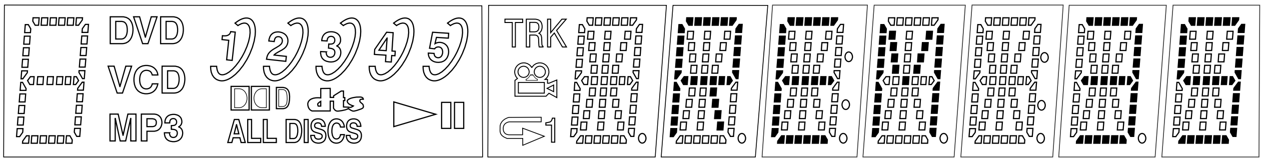
2-3-3-2. Operation and Display

When a key on the remote commander is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the DISPLAY key on the remote commander. "NOTHING" is displayed when nothing is entered. Also, VCD, DVD, and CD segments turn on when a communication error occurred.

Remote commander key name display (at input of PAUSE key)



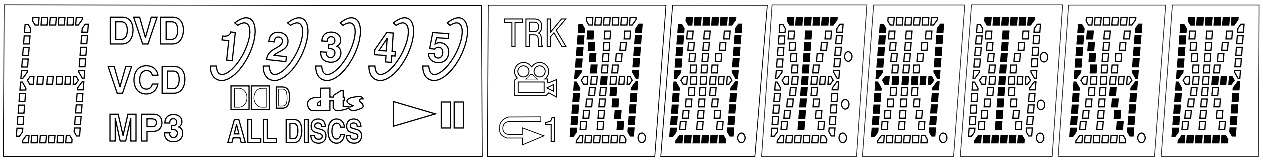
Remote commander key code display (at input of PAUSE key, Key code: 39h)



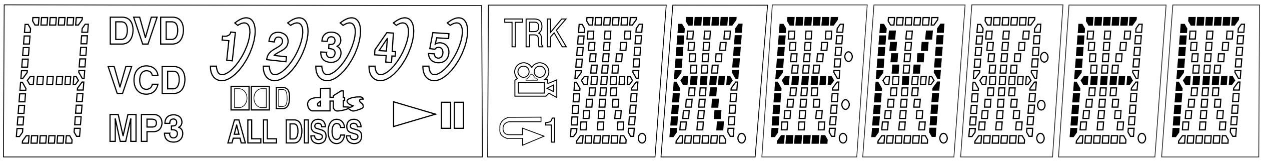
2-3-4. Communication Monitoring Display

The communication state is monitored and displayed while the key name on the main unit and the remote commander is displayed. When the communication to the System Controller failed, VCD, DVD, and CD segments turn on.

Communication error display (at no key input)



Communication error display (at code display without input of the remote commander)



2-3-5. FLD Anode Test Display and SHUTTLE Click Operation Test

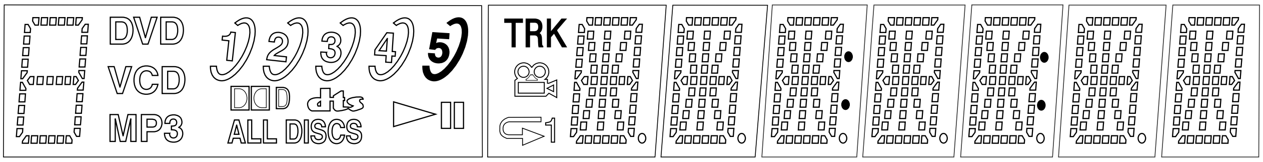
2-3-5-1. Transition Keys in Self Check Mode

- RIGHT on the main unit and the remote commander
- SHUTTLE on the remote commander during Anode Test display
  (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

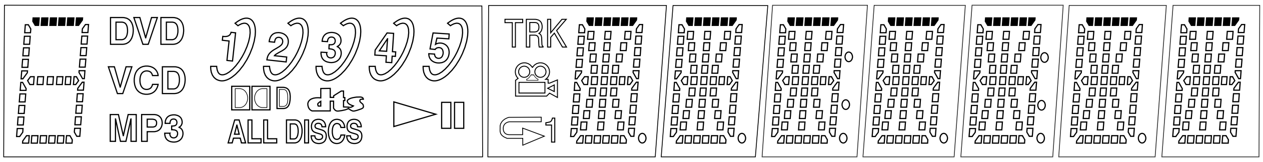
2-3-5-2. Operation and Display

The Self Check mode transits to this mode when RIGHT key is entered. Only the first segment of each grid of FLD turns on, and each time the SHUTTLE is entered, the segment of each grid is switched in order. When SHUTTLE input is clockwise, the segment switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each segment turns on individually.

Display at the start of Anode Test



↓ (Input in CW direction)



2-3-6. FLD Grid Test Display and SHUTTLE Click Operation Test

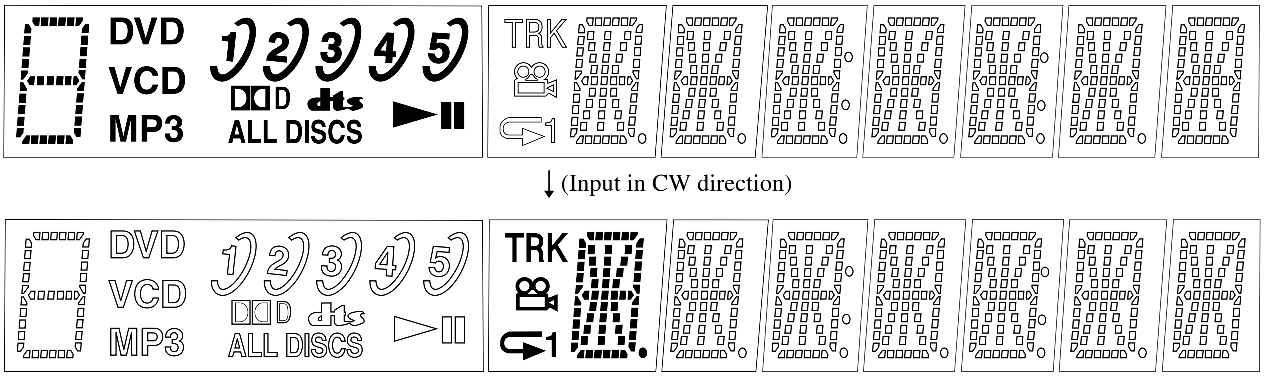
2-3-6-1. Transition Keys in Self Check Mode

- UP on the main unit and the remote commander
- SHUTTLE on the remote commander during Grid Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

2-3-6-2. Operation and Display

The Self Check mode transits to this mode when UP key is entered. The first grid of FLD all turns on and other grids turn off. Each time the SHUTTLE is entered, the grid is switched in order. When SHUTTLE input is clockwise, the grid switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direc-tion. This tests whether each grid turns on individually.

Display at the start of Grid Test



2-3-7. LED Test Display

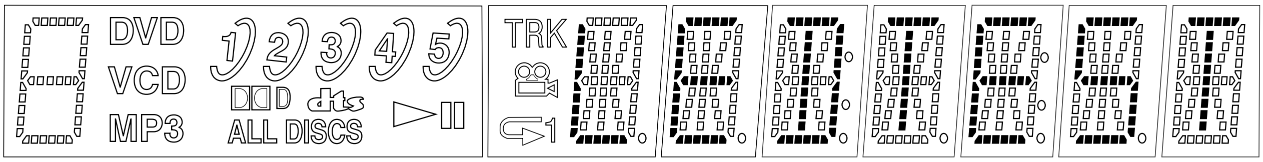
2-3-7-1. Transition Keys in Self Check Mode

- DOWN on the main unit and the remote commander
- SHUTTLE on the remote commander during LED Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

2-3-7-2. Operation and Display

LED is switched in order by the input of JOG/SHUTTLE. Also, LED ON/OFF is switched by the input of same key as the function that turns on the LED concerned.

FLD display during LED Test

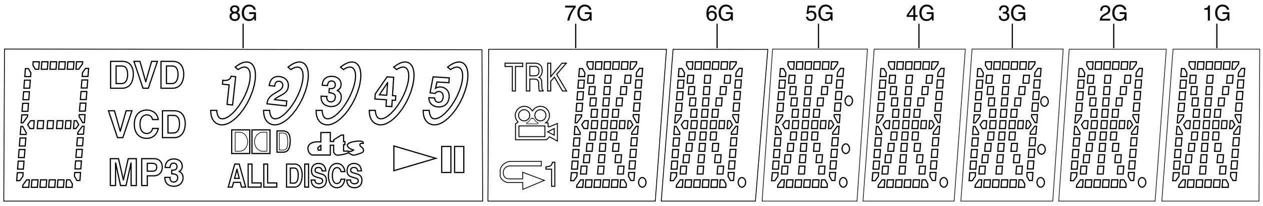


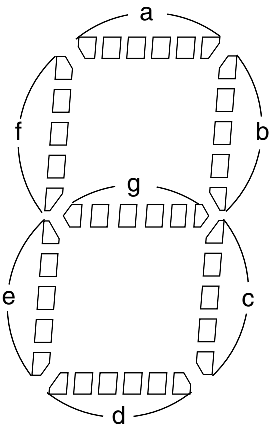
2-3-8. Beep Sound Test (NC655P only)

2-3-8-1. Transition Keys in Self Check Mode

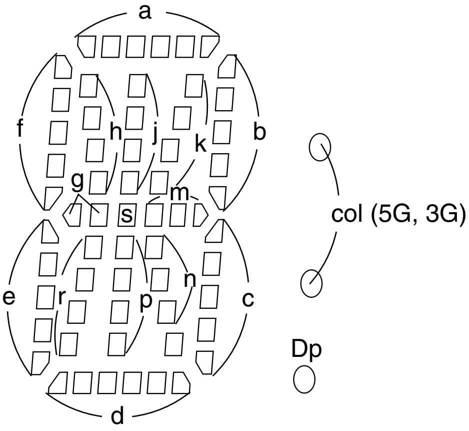
- Input of a key on main unit

GRID ASSIGNMENT





(8G)



(7G~1G)   (7G~2G)

ANODE CONNECTION

	8G	7G	6G	5G	4G	3G	2G	1G
P1	5	TRK	–	col	–	col	–	–
P2	a	a	a	a	a	a	a	a
P3	4	h	h	h	h	h	h	h
P4	3	j	j	j	j	j	j	j
P5	2	k	k	k	k	k	k	k
P6	b	b	b	b	b	b	b	b
P7	f	f	f	f	f	f	f	f
P8	1	m	m	m	m	m	m	m
P9	DVD	s	s	s	s	s	s	s
P10	g	g	g	g	g	g	g	g
P11	e	e	e	e	e	e	e	e
P12	V	n	n	n	n	n	n	n
P13	CD	p	p	p	p	p	p	p
P14	DD D	r	r	r	r	r	r	r
P15	c	c	c	c	c	c	c	c
P16	d	d	d	d	d	d	d	d
P17	MP3	Dp	Dp	Dp	Dp	Dp	Dp	–
P18	⏸	1	–	–	–	–	–	–
P19	▷	↩	–	–	–	–	–	–
P20	dts	🎥	–	–	–	–	–	–
P21	ALL DISCS	–	–	–	–	–	–	–

6-11. TROUBLESHOOTING

6-11-1. Cannot Enter Test Mode

You cannot enter the Test mode when either button has been pressed by any reason with the board assembled in the front panel. In this state, the power does not turn on even under normal condition (the unit is kept in standby state), and also no button is active and the remote commander is not accepted. In this case, disconnect the MB-108 board and AV-72 board, and with the SELF CHECK (pin ⑩) of IF CON (IC404) on the IF-99board kept in low state, supply AC, and the IF CON self-diagnosis mode will be forcibly activated. The IF CON (IC404) checks the SELF CHECK port only after the power on reset (only at AC supply, not in standby state). If any button is pressed, its name is displayed on the fluorescent display tube. But, if other than "NOTHING" is displayed though no button is pressed, it means that any button has been pressed.

6-11-2. Faults in Test Mode (MB-108 board)

1. The test mode menu is not displayed.

1-1. Board visual check

Check that the ICs of SYSCON (IC104), ROM (IC106 or IC107), AVD (IC403), ARP & SERVO (IC301) are working correctly.

Check that outside appearance of the ICs is normal.

Check that IC pins are not short-circuited.

Check that there is no soldering error.

Check that outside appearance of the capacitors and resistors is normal.

1-2. Power supply voltage check

Check the power voltage of the power connector (CN102).

Check the power voltage of SYSCON (IC104).

Check the power voltage of ROM (IC106 or IC107).

Check the power voltage of AVD (IC403).

Check the power voltage of ARP & SERVO (IC301).

If the power voltage has any abnormality →

Check that the power supply lines are not shorted.

Check that there is no soldering error.

If any abnormality cannot be found still →

Check that each IC is working normally.

1-3. Clock signal check

Measure the clock signal frequency at CPUCK (CL101) of SYSCON (IC104) with an oscilloscope.

If the 8.25 MHz signal appears. → Check the machine according to section 1-3-1

If the 33 MHz signal appears. → Check the machine according to section 1-3-2.

If other frequencies are output.

R110 and R113 have defective soldering, X101 crystal oscillator is defective.

If the measurement point is fixed to either "H" or "L". →

Observe XFRRST (pin-(76)) of SYSCON (IC104) with an oscilloscope.

If the measurement point is "L", check the following items.

If the IC has defective soldering, if the IC is short-circuited.

If the measurement point is "H",

→ Component X101 or SYSCON (IC104) is defective.

1-3-1. When the 8.25 MHz signal appears at CPUCK

- Check the XRD, XWRH and CS0X signal.

Observe XRD (pin-(70)), XWRH (pin-(71)), and CS0X (pin-(58)) of SYSCON (IC104) with an oscilloscope.

If these pins are fixed to either "L" (0V) or "H" (3.3V), or if these pins stay in the center voltage, check the followings.

Check if the signal line does not have the defective soldering.

Check if the signal line is short-circuited with other signal lines.

If you cannot find any problem → SYSCON (IC104) is defective.

- HA [0 to 21] signal and HD [0 to 15] signal check

Observe HA [0 to 21] (pins-(102) to (109), (111) to (118), (120), ① to ⑤) of SYSCON (IC104) and HD [0 to 15] (pins-(85) to (100)) with an oscilloscope.

If these pins are fixed to either "L" (0V) or "H" (3.3V), or if the HA pin stays in the center voltage, check the followings. (HD stays in the center voltage when it is normal.)

→ Check if the signal line does not have the defective soldering, or is short-circuited with other signal line or SYSCON (IC104) is defective.

- Reset signal check

Check if XFRRST (pin-(76)) of SYSCON (IC104) normal or not.

The signal starts up at the same time as Vcc → Defective soldering.

If the trouble does not apply to any of the above-described phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

1-3-2. When the 33 MHz signal appears at CPUCK

- WAIT signal check

Observe XWAIT (pin-(67)) of SYSCON (IC104) with an oscilloscope.

If it is fixed to "L" (0V). → Observe CS2X to CS5X (pins-(60) to (63)).

If CS2X or CS3X is "L". → AVD (IC403) has defective soldering or AVD is defective.

If CS4x or CS5X is "L". → ARP & SERVO (IC301) has defective soldering or ARP & SERVO is defective.

If any one of the above is not "L". → XWAIT or CSnX is short-circuited or has the defective soldering or AVD (IC403) is defective or ARP & SERVO (IC301) is defective.

Center voltage → The XWAIT line has defective soldering or is short-circuited or AVD (IC403) is defective or ARP & SERVO (IC301) is defective or SYSCON (IC104) is defective.

- CSnX signal check

Observe CS0X to CS5X (pins-(58) to (63)) of SYSCON (IC104) with an oscilloscope.

If they are fixed to "L" (0V) or if to center voltage → Check that the ICs do not have the defective soldering or is short-circuited with the other signal lines or SYSCON (IC104) is defective.

CS0X: ROM (IC106 or IC107)
CS2X, CS3X: AVD (IC403)
CS4X, CS5X: ARP & SERVO (IC301)

If the trouble symptom does not apply to any of the above phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

2. Test mode menu is displayed but the machine stops when menu is selected

2-1. AVD (IC403) check

Observe SDCLKO (pin-(127)) of AVD (IC403) with an oscilloscope.

95 MHz → No problem

27 MHz → Observe the XRST, HA, HD, XRD, XWRH INT and CS signal waveform at the respective pins of AVDEC, AVD (IC403) is defective.

If the signal is other than the above frequencies → AVD (IC403) 27MHz signal line (CLKI (pin-(158)), SCLKIN (pin-(160))) is short-circuited, IC mount is defective, AVD (IC403) is defective, PLL (IC103) is defective.

2-2. INT signal check

Observe INT0 to 2 (pins-⑯ to ⑱) of SYSCON (IC104) with an oscilloscope.

If they are fixed to "L" (0V) or fixed to the center voltage → Check that the ICs do not have the defective soldering, or are short-circuited, SYSCON (IC104) is defective, or the following ICs are not defective.

INT0: AVD (IC403)
INT1, INT2: ARP & SERVO (IC301)

2-3. If any abnormality cannot be confirmed by the above-described checks, check the CS signal that is currently output.

The CS signal other than CS0X is being output. → IC mount is defective or the IC is defective depending on the moving CS signal.

CS2X, CS3X: AVD (IC403)
CS4X, CS5X: ARP & SERVO (IC301)

If the trouble is not applicable to any of the above phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

3. If the message "SDSP No Ack" appears after the menu is displayed.

3-1. ARP & SERVO clock signal check

Check frequency of CLKIN (pin-(150))

33 MHz → Normal

Frequency other than 33 MHz → CLKIN is short-circuited or defective soldering or PLL (IC103) is defective or ARP & SERVO (IC301) is defective

3-2. ARP & SERVO (IC301) PLL oscillation check

Observe PLCKO (pin-(87)) of ARP & SERVO (IC301) with an oscilloscope.

If the pin is fixed to either "L" (0V) or "H" (3.3V).

If XRST if fixed to "L". XRST has the defective soldering, In all other cases. ARP & SERVO (IC301) is defective

If it is oscillating.

HA [0 to 7] are HD [8 to 15] are short-circuited, check XSDSPIT and XSDSPCS or ARP & SERVO (IC301) is defective.

4. If trouble occurs at the specific item of the "Diag All Check".

IC mount of the NG item is defective or IC is defective.

5. Picture and audio are not output.

Check connection of CN601

Check for the defective connection of flat cable and check of damage of the flat cable.

6. Picture is output but audio is not output.

Check the audio data output (at pins-㉔, ㉘, and ㉙) of AVD (IC403)

The audio data is not output. → AVD (IC403) or audio DAC (IC601) mount is defective or power supply is defective or AVD (IC403) or audio DAC (IC601) is defective.

PLL (IC103) 512fs output check

If the frequency or waveform has abnormality. → The signal line has defective soldering or the signal line is short-circuited with other signal lines or PLL (IC103) is defective.

7. Audio is output but picture is not output. (NC615 only)

Observe pins-(55), (57), (59), (61), (63) and (65) of AVD (IC403) with an oscilloscope.

If the analog signal is not output. → The signal line has the defective soldering or is short-circuited or parts are defective or AVD (IC403) is defective.

8. Audio is output but picture is not output. (NC655P only)

Observe pins-㊲, ㊳, ㊴, ㊷, ㊸ and ㊹ of VDAC (IC504) with an oscilloscope.

If the analog signal is not output. → The signal line has the defective soldering or is short-circuited or parts are defective or VDAC (IC504) is defective.

6-11-3. Drive Auto Adjustment stops due to error.

The ARP & SERVO (IC301) analog circuit of MB-103 board is defective or RF-Amp (IC201) or M-Driver (IC202) peripheral circuit is defective or optical pickup block is defective or flat cable connection is defective

6-11-4. The product itself is defective.

- If MB108 does not have any problem,

The board other than MB-108 board is defective or connection is defective or optical pickup block is defective or mechanism deck is defective

1. Power LED does not light in Red when the AC power is turned on.

Check the EVER –13V (pin-③), EVER+3.3V (pin-⑪), EVER+11V (pin-⑬) voltage of the power supply block CN201.

If voltage is abnormal. → The power supply block is defective.

2. Power LED does not light in green after transmitting the POWER on command. It remains lighting in red (in the STANDBY mode).

2-1. Check the EVER -13V (pin-③), EVER+3.3V (pin-⑪), EVER+11V (pin-⑬) voltage at CN201 of the power supply block/

If voltage is abnormal. → The power supply block is defective.

2-2. Check if the fuse on the IF board has blown of not.

If the fuse has blown → Replace the fuse.

2-3. Check the P-CONT (pin-②) at CN401 of the IF-99 board when the POWER button is pressed.

If it remains at “L”,

→ The signal line has the defective soldering or it is short-circuited with other signal lines or capacitor or resistor is defective or IFCON is defective or connection between the power supply block and the IF-99 board is defective, or connector installation is defective, or the power supply block is defective.

2-4. Check if the button is kept depressed in the IFCON self mode.

If the button is kept depressed. → The front panel is defective, or IF-99 board is defective.

2-5. Check PONCHK (pin-㉚) of IFCON (IC404) on the IF-99 board.

If it is 0.5 V or more. → The power supply is defective, or IF-91 board is defective.

3. Power LED becomes red (STANDBY mode) in at once through Power LED lights in Green once when the POWER button is pressed.

3-1. Check CN201 voltage of the power supply block when the LED lights in green.

If voltage is abnormal. → The power supply block is defective, or the IF-99 board is defective, or MB108 is defective

3-2. Check XFRRST (pin-⑧) at CN101 on the MB-108 board.

If it is fixed to “L”. → The signal line has defective soldering, or is short-circuited with other signal lines, or parts are defective.

3-3. Check IFBSY (pin-⑤), XIFCS (pin-⑥), SI0 (pin-④), SO0 (pin-①) and SC0 (pin-③) at CN101

If they are fixed to “H” or “L”.

→ The signal line has defective soldering, or is short-circuited with other signal line, or parts are defective, or SYSCON (IC104) is defective

If they change between “L/H”.

Connector installation is defective, or the IF-99 board is defective, or SYSCON (IC104) is defective.

If they stay in the center voltage.

Poor connection of flexible wiring board such as it is inserted in an angle diagonally, or defective soldering, or is short-circuited with other signal line.

3-4. Check PONCHK (pin-㉚) of IFCON (IC404) on the IF-99 board.

If rise-up time from 0.5 V to 1.5 V or more takes longer time, or it does not exceed 1.5 V or more. → The IF board is defective.

4. The LED lights in green but the FL display does not light when the POWER button is pressed.

Connection between the power supply block and the IF-99 board is defective, or connector installation is defective, or the IF-99 board is defective.

5. Both picture and audio are not output.

Connection between the power supply block and the IF-99 board is defective, or connection between the IF-99 board and the AV-72 board is defective, or connection between the AV-72 board and the MB-108 board is defective, or connector installation is defective, or AV-72 board is defective.

6. Picture is not normal. (Block noise or others appear.)

The MB-108 board AVD (IC403) or SDRAM (IC404, IC405) is defective, or ARP & SERVO (IC301) is defective.

6-12. MECHANISM TEST MODE ADJUSTMENT

• Introduction

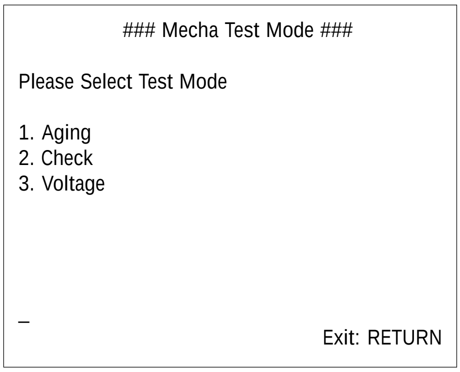
The mechanism test mode is designed for mechanism check. Do not use this mode for purposes other than the mechanism check.

6-12-1. How to enter the mechanism test mode

While the machine is in the standby mode, press the keys on the remote commander in the order starting from TITLE → CLEAR → POWER to enter the remote commander service mode. Then press the numeric key 3 and select "3. Mecha Test Mode".

6-12-2. Types of the mechanism test mode

When you enter the mechanism test mode, the following menu appears.



```
### Mecha Test Mode ###

Please Select Test Mode

1. Aging
2. Check
3. Voltage





_
                                    Exit: RETURN
```

Press the desired numeric number on the display. Then you enter the selected mode.
When "1. Aging" is selected, you enter the mechanism aging mode.
When "2. Check" is selected, you enter the mechanism check mode.
When "3. Voltage" is selected, you enter the voltage check mode.

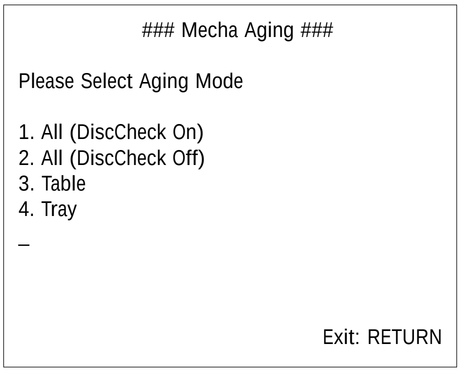
6-12-3. Description of Each Mode

3-1. Mechanism aging mode

This is the aging mode for mechanism. When this mode is selected, the mechanism is initialized first.

3-1-1. Selection of aging mode

When initialization is completed, the following menu appears. Select the desired aging mode from the following menu.



```
### Mecha Aging ###

Please Select Aging Mode

1. All (DiscCheck On)
2. All (DiscCheck Off)
3. Table
4. Tray
_



                                    Exit: RETURN
```

When you select the desired numeric number on display, the corresponding aging mode will be selected.

• "1. All (DiscCheck On)"

This is the overall aging mode (with disc check).
Contents of the aging operations are as follows. Table and tray are moved in the following sequence: TableClose (DiscNumber Random) → ChuckUp → DiscCheck → TableEx Open → TrayExMove (Left → Right) → TableExClose → ChuckDown → TableOpen. A series of operation as described above is called as one full count, and is repeated.

• "2. All (DiscCheck Off)"

This is the overall aging mode (without disc check).
Contents of the aging operations are as follows. Table and tray are moved in the following sequence: TableClose(DiscNumber Random) → ChuckUp → TableExOpen → TrayExMove(Left → Right) → TableExClose → ChuckDown → TableOpen. A series of operation as described above is called as one full count, and is repeated.

• "3. Table"

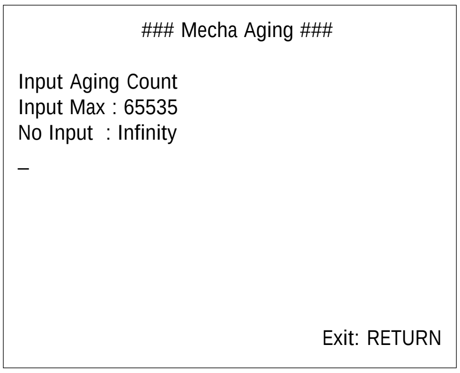
This is the table aging mode.
Contents of the aging operations are as follows. Table is rotated in the following sequence: TableClose(Tray NoMove) → ChuckUp → TableExOpen → TableExClose → ChuckDown → TableOpen. A series of operation as described above is called as one full count, and is repeated.

• "4. Tray"

This is the tray aging mode.
Contents of the aging operations are as follows. Tray is rotated one full turn in the clockwise direction and is rotated one full turn in the counter-clockwise direction. One full rotation of tray is called as one full count, and is repeated. The disc number is reduced by one after every 20 counts.

3-1-2. Setting number of times of aging

When aging mode is selected, the following menu appears. Set the number of times of aging in this menu.



```
### Mecha Aging ###

Input Aging Count
Input Max : 65535
No Input  : Infinity
_






                                    Exit: RETURN
```

Use the numeric keys to enter the desired number. Then press ENTER to set the number. If you press ENTER without entering any number, the number of times of aging becomes infinite.

3-1-3. Setting disc

When the number of times of aging is set, the table is opened and the following menu appears. Set a test disc while the following menu is displayed.

```
              ### Mecha Aging ###

Please Select Aging Mode

ENTER : Aging Start
RIGHT : Disc Skip (Wed)
LEFT  : Disc Skip (Rvs)
_



                                  Exit: RETURN
```

When you press RIGHT, the tray moves in the direction of Disc Number +1. When you press LEFT, the tray moves in the direction of Disc Number –1. Press ENTER to start aging.

3-1-4. While aging is in progress

While aging is in progress, the following screen appears.

```
              ### Mecha Aging ###

STOP        : Aging Stop
MaxCount    : 50000
NowCount    : 1
Disc Number : 1
DVD SL 12cm




                                  Exit: RETURN
```

Max Count indicates the number of times of aging. Now Count indicates the present number of times of aging. Disc Number indicates the disc number of the present chucking position.
The indication “DVD SL 12cm” under the Disc Number indicates the disc type when disc check is performed.
In addition to it, the following contents are displayed on the FL display tube.

```
A  B – C
```

“A” indicates the aging mode.

1: All (DiscCheck On)
2: All (DiscCheck Off)
3: Table
4: Tray

“B” indicates the aging operation. (Disc number is displayed during the Tray aging mode.)

1: Table Close
2: Chuck Up
3: DiscCheck
4: Table ExOpen
5: Tray ExMove
6: Table ExClose
7: Chuck Down
8: Table Open

“C” indicates the number of times of aging.

If you press STOP or RETURN during aging, the aging operation is terminated. If you press PAUSE during aging, the aging operation is paused. Pressing any key resumes the aging operation.

3-1-5. Terminating the aging operation

The aging operation terminates when the following conditions are satisfied.

- The aging is performed for the set number of times.
- The aging is terminated as STOP or RETURN is pressed.
- An abnormality occurs in mechanism.

When the aging operation ends normally, table is opened and the following menu appears.

```
              ### Mecha Aging ###

STOP           : Aging Stop
MaxCount       : 50000
NowCount       : 50000
Disc Number    : 1
DVD SL 12cm

ENTER          : Exit
RIGHT          : Disc Skip (Wed)
LEFT           : Disc Skip (Rvs)
_
                                  Exit: RETURN
```

When you press RIGHT , the tray moves in the direction of Disc Number +1. When you press LEFT , the tray moves in the direction of Disc Number –1. Press ENTER to terminate the aging mode after tray is closed and chucked.

If any abnormality occurs during the aging mode, the aging operation is stopped and the following menu appears.

```
              ### Mecha Aging ###

STOP        : Aging Stop
MaxCount    : 50000
NowCount    : 1
Disc Number : 1
DVD SL 12cm

Table Error! (*1)
Table Close Error! (*2)
Push Any Key
_
                                  Exit: RETURN
```

*1 indicates the mechanical part where error occurs.
*2 shows the mode when error occurs.

3-2. Mecha Check Mode

This is the mode called "Mecha Check" that checks if the mechanical loads to the mechanism is within the allowable range or not. For the table, the operating time in each mode is measured for judgment. For the tray, the time of guide slit is measured for judgment. When the "Mecha Check" mode is selected, the following menu appears.

```
            ### Mecha Check ###

ENTER  : MechaInitial
PLAY   : All Check
STOP   : Table Check
RIGHT  : Tray Check (Right)
LEFT   : Tray Check (Left)
DISP   : Limit Set
_



                              Exit: RETURN
```

3-2-1. Operation contents

Operation contents of each mode are described below.

- **ENTER: MechaInitial**
  It initializes the mechanism. If the mechanism is not initialized, pressing any buttons of either STOP or RIGHT or LEFT activates no operations. In such a case, initialize the mechanism by executing this command.

- **PLAY: All Check**
  Both of the table and tray are checked in this mode. Operation check is performed in the following order starting from MechaInitial → ChuckUp → TableExOpen → TableExClose → ChuckDown → TableOpen → TableClose → TrayRightTurn → TrayLeftTurn. Disc sensor is also check at the same time. If a single disc is present on the tray, OK is judged. In all other cases, NG is judged.

- **STOP: Table Check**
  Table is checked. Operation check is performed in the following order starting from ChuckUp → TableExOpen → TableExClose → ChuckDown → TableOpen → TableClose.

- **RIGHT: Tray Check (Right)**
  Tray is checked. The tray is rotated by full turn in the clockwise direction.

- **LEFT: Tray Check (Left)**
  Tray is checked. The tray is rotated by full turn in the counter-clockwise direction.

- **DISP: Limit Set**
  It sets the limit value of each check. When DISPLAY is pressed, the following menu appears.

```
            ### Mecha Check ###

Limit Time
1. Load Min    2000  ms
2. Load Max    3000  ms
3. Chuck Min    300  ms
4. Chuck Max    600  ms
5. Guide Min    120  ms
6. Guide Max    150  ms
Change Number : 1
Limit Time : 999_

                              Exit: RETURN
```

Each item has the following meaning.

- LoadMin : Lower limit of operating time between TableOpen-TableClose and between TableExOpen-TableExClose
- LoadMax : Upper limit of operating time between TableOpen-TableClose and between TableExOpen-TableExClose.
- ChuckMin: Lower limit of operating time between ChuckUp-ChuckDown.
- ChuckMax: Upper limit of operating time between ChuckUp-ChuckDown.
- GuideMin: Lower limit of the passing time over the guide slit.
- GuideMax: Upper limit of the passing time over the guide slit.

To change the limit value, select the desired item number by enter the number from the keyboard. Then enter the data to set. The data up to 9999 can be entered. If you press RETURN or ENTER when entering the item number, the display returns to the previous menu.

3-2-2. Result display

① AllCheck result display

When AllCheck is completed, the following display appears.

```
                ### Mecha Check ###

Checkresult : All OK!

Exist Disc    : 3
NG Number : 2     11


PLAY  : All Check Start
NEXT  : DetailedDisplay
DISP  : Limit Set

                                      Exit: RETURN
```

• Check Result

When the test result is all OK, the message “AllOK!” appears. If any item is found defective, “NG!” is displayed. The conditions to show NG are shown below.

“Operation time has exceeded either upper limit or lower limit.”
“Disc is not inserted or 2 or more discs are detected.”
“Either tray or table does not move.”

• Exist Disc

The number where disc is located, is shown.

• NG Number

This message appears when the test result is NG. The displayed numbers correspond to the following operations.

Table

1: Open → Down
2: Down → Open
3: Up → ExOpen
4: ExOpen → Up
5: Up → Down
6: Down → Up

Tray (DiscNumber)

11: 1 → 2
12: 2 → 3
13: 3 → 4
14: 4 → 5
15: 5 → 1
21: 1 → 5
22: 5 → 4
23: 4 → 3
24: 3 → 2
25: 2 → 1

If any of the following buttons is pressed while this display is being shown, the following operations start.

When PLAY is pressed, AllCheck starts.
When NEXT is pressed, details of measurement result are displayed.
When DISPLAY is pressed, the limit setting menu appears.
When any other key is pressed, the display returns to the main menu.

② TableCheck result display

When table check is completed, the following display appears.

```
                ### Mecha Check ###

Load Time
01 : Open –> Down : 2709 ms OK
02 : Down –> Open : 2277 ms OK
03 : Up –> ExOpen  : 2244 ms OK
04 : ExOpen –> Up  : 2819 ms OK
05 : Up –> Down     :  407 ms OK
06 : Down –> Up     :  422 ms OK
Push Any Key
_

                                      Exit: RETURN
```

The operation time between each operation segments is displayed (in unit of ms). In the right of the time display, judgment if the time is OK or NG is displayed. This judgment of OK or NG is displayed on the FL display tube. If the remote commander UP or DOWN key is pressed, results of measurement of each operation segment are displayed on FL display.

When NEXT is pressed during AllCheck, result of the next measurement is displayed. When PREVIOUS is pressed during AllCheck, result of the previous measurement is displayed. If any other key is pressed, display returns to the main menu.

In the TableCheck mode, if any key is pressed, display returns to the main menu.

③ TrayCheck (Right) result display

After tray check is completed by rotating it in clockwise direction, the following display appears.

```
                ### Mecha Check ###

GuideSlit Time (Right)
11 : 1 –> 2 : 139,138 ms OK
12 : 2 –> 3 : 138,137 ms OK
13 : 3 –> 4 : 138,138 ms OK
14 : 4 –> 5 : 139,138 ms OK
15 : 5 –> 1 : 140,139 ms OK
Exist Disc : 3
Push Any Key
_

                                      Exit: RETURN
```

The guide slit time (in units of ms) of each operation segment of tray is displayed. In the right of the time display, judgment if the time is OK or NG is displayed. The ExistDisc indicates the number where disc is located. This judgment of OK or NG is displayed on the FL display tube. If the remote commander UP or DOWN key is pressed, results of measurement of each operation segment are displayed on FL display.

When NEXT is pressed, result of the next measurement is displayed. When PREVIOUS is pressed, result of the previous measurement is displayed. If any other key is pressed, display returns to the main menu.

In the TrayCheck mode, if any key is pressed, display returns to the main menu.

④ TrayCheck (Left) result display

After tray check is completed by rotating it in the counter-clockwise direction, the following display appears.

```
                ### Mecha Check ###

GuideSlit Time (Left)
21 : 1 –> 5 : 139,138 ms OK
22 : 5 –> 4 : 138,137 ms OK
23 : 4 –> 3 : 138,138 ms OK
24 : 3 –> 2 : 139,138 ms OK
25 : 2 –> 1 : 140,139 ms OK
Exist Disc : 3
Push Any Key
_

                                  Exit: RETURN
```

The guide slit time (in units of ms) of each operation segment of tray is displayed. In the right of the time display, judgment if the time is OK or NG is displayed. The ExistDisc indicates the number where disc is located. This judgment of OK or NG is displayed on the FL display tube. If the remote commander UP or DOWN key is pressed, results of measurement of each operation segment are displayed on FL display.
When NEXT is pressed, result of the next measurement is displayed. When PREVIOUS is pressed, result of the previous measurement is displayed. If any other key is pressed, display returns to the main menu.
In the TrayCheck mode, if any key is pressed, display returns to the main menu.

3-3. Voltage Check Mode

This mode checks the drive voltages of tray and table. Because the full drive voltage is applied to each motor in this mode, do not execute this mode while the mechanism is being connected. When this mode is selected, the following menu appears.

```
               ### Voltage Check ###

RIGHT  : MOTOR +
LEFT   : MOTOR –
ENTER : STOP
_





                                  Exit: RETURN
```

When PLAY is pressed, AllCheck starts.

When RIGHT is pressed, the positive (+) voltage is applied to the motors of tray and table.
When LEFT is pressed, the negative (+) voltage is applied to the motors of tray and table.
When ENTER is pressed, voltage is stopped to be applied to the motors of tray and table.
Press RETURN to exit this mode.

SECTION 7
ELECTRICAL ADJUSTMENT

In making adjustment, refer to 7-3. Adjustment Related Parts Arrangement.

This section describes procedures and instructions necessary for adjusting electrical circuits in this unit.

Instruments required:

1) Color monitor TV
2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital voltmeter
5) Standard commander (RMT-D126J)
6) DVD reference disc
   HLX-501 (J-6090-071-A) (dual layer) (NTSC)
   HLX-503 (J-6090-069-A) (single layer) (NTSC)
   HLX-504 (J-6090-088-A) (single layer) (NTSC)
   HLX-505 (J-6090-089-A) (dual layer) (NTSC)
7) SACD reference disc
   HLXA-509 (J-6090-090-A)
8) Extention Cable (J-6090-107-A)

7-1. POWER SUPPLY ADJUSTMENT

ETXNY410M0F NC625 : E, AEP, UK
NS625 : AUS, SP
DPS-21BPA NC625 : US, CND, MX
NC665P

Mode	E-E
Instrument	Digital voltmeter
EVER +0.5 V Check	
Test point	CN201 pin ⑪
Specification	5.0 ± 0.3 Vdc
SW +3.5 V Check	
Test point	CN201 pin ⑩
Specification	3.5 ± 0.2 Vdc
SW+5 V Check	
Test point	CN201 pin ⑫
Specification	5.0 ± 0.3 Vdc
SW +11 V Check	
Test point	CN201 pin ⑤,⑥
Specification	11.0 ± 1.0 Vdc
EVER +11 V Check	
Test point	CN201 pin ⑬
Specification	11.2 ± 1.0 Vdc
EVER –15.5 V Check	
Test point	CN201 pin ②
Specification	$-15.5 \pm^{-7.0}_{+1.0}$ Vdc

Checking method:

1) Confirm that each voltage satisfies the specification.

Note
Because the heatsink installed on the power supply board is a part of the primary side, never touch it to avoid electrical shock.

Abbreviation
US : USA model
CND : Canadian model
PX : PX model
E : Latin model
MX : Mexico model
AEP : AEP model
UK : UK model
SP : Singapore model
AUS : Australia model

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-108 Board)

<Purpose>

This adjustment is made to satisfy the NTSC/PAL standard, and if not adjusted correctly, the brightness will be too large or small.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	NC615: RV401, NC655P: RV501
Specification	$1.0^{+0.04}_{-0.02}$ Vp-p

Adjusting method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Adjust the RV501 to attain $1.0^{+0.04}_{-0.02}$ Vp-p.

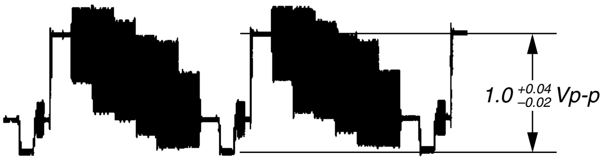


Fig. 7-1.

2. Progressive Video Output Level Adjustment (MB-108 Board)

<Purpose>

This adjusts progressive video output level. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV502
Specification	$1.0^{+0.04}_{-0.02}$ Vp-p

Adjusting method:

1) In the test mode initial menu “7” Prog Level Adjustment, set so that color bars are generated.
2) Confirm that the Y level is $1.0^{+0.04}_{-0.02}$ Vp-p.

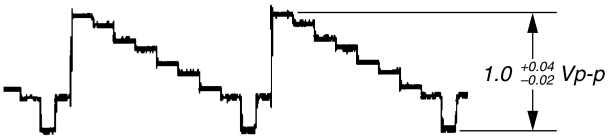


Fig. 7-2.

3. Checking S Video Output S-Y

<Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.05 Vp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-Y level is 1.0 ± 0.05 Vp-p.

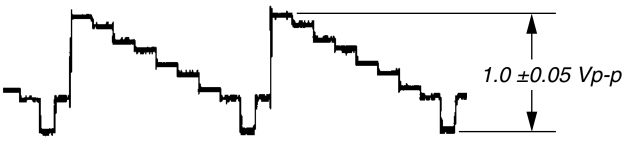


Fig. 7-3.

4. Checking S Video Output S-C

<Purpose>

This checks whether the S-C satisfies the NTSC/PAL standard. If it is not correct, the colors will be too dark or light.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-C) connector (75 Ω terminated)
Instrument	Oscilloscope

Specification	A = 286 ± 30 mVp-p (NTSC)
	A = 300 ± 100 mVp-p (PAL)

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-C burst is “A”.

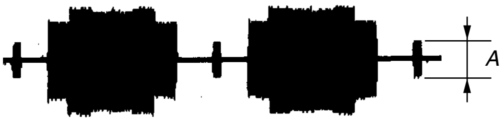


Fig. 7-4.

5. Checking Component Video Output Y (US, Canadian, Australian, PX Model)

<Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector, (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.05 Vp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the Y level is 1.0 ± 0.05 Vp-p.

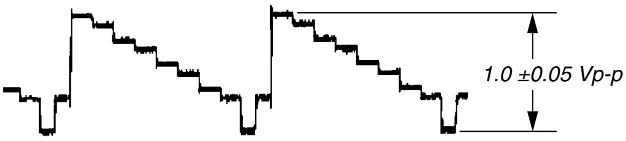


Fig. 7-5.

6. Checking Component Video Output B-Y (US, Canadian, Australian, PX Model)

<Purpose>

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (PB) connector (75 Ω terminated)
Instrument	Oscilloscope

Specification	A = 646 ± 50 mVp-p (US,Canadian)
	A = 700 ± 50 mVp-p (others)

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the B-Y level is A.

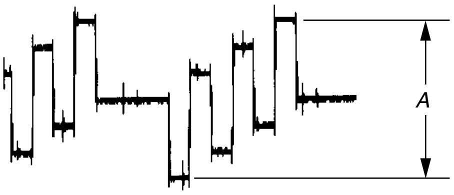


Fig. 7-6.

7. Checking Component Video Output R-Y (US, Canadian, Australian, PX Model)

<Purpose>

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (PR) connector (75 Ω terminated)
Instrument	Oscilloscope

Specification	A = 646 ± 50 mVp-p (US,Canadian)
	A = 700 ± 50 mVp-p (others)

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the R-Y level is B.

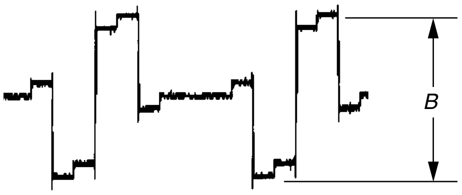


Fig. 7-7.

8. Checking RGB Output R (AEP, UK Model)

<Purpose>

This checks RGB output R. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	In test mode, Push $\boxed{0}$ for Syscon Diagnosis and push $\boxed{7}$ for Video and push $\boxed{5}$ for RGB out
Signal	Color bars
Test point	LINE 1 (RGB)-TV connector pin ⑮ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) Confirm that the R level is 700 ± 50 mVp-p.

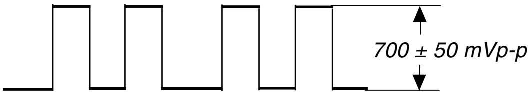


Fig. 7-8.

9. Checking RGB Output G (AEP, UK Model)

<Purpose>

This checks RGB output G. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	In test mode, Push $\boxed{0}$ for Syscon Diagnosis and push $\boxed{7}$ for Video and push $\boxed{5}$ for RGB out
Signal	Color bars
Test point	LINE 1 (RGB)-TV connector pin ⑪ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) Confirm that the G level is 700 ± 50 mVp-p.

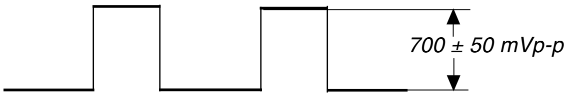


Fig. 7-9.

10. Checking RGB Output B (AEP, UK Model)

<Purpose>

This checks RGB output B. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	In test mode, Push $\boxed{0}$ for Syscon Diagnosis and push $\boxed{7}$ for Video and push $\boxed{5}$ for RGB out
Signal	Color bars
Test point	LINE 1 (RGB)-TV connector pin ⑦ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) Confirm that the B level is 700 ± 50 mVp-p.

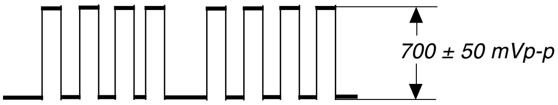
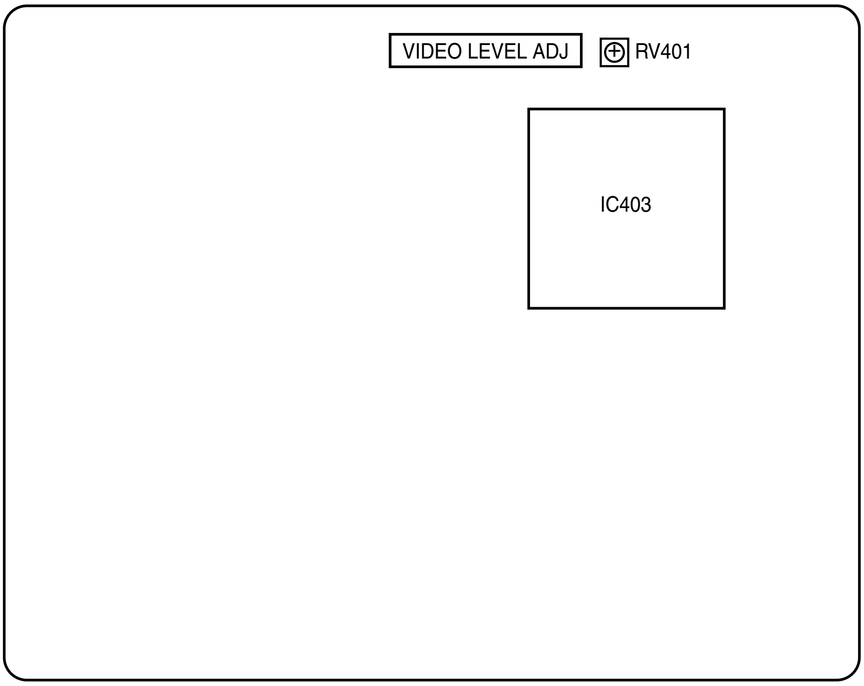


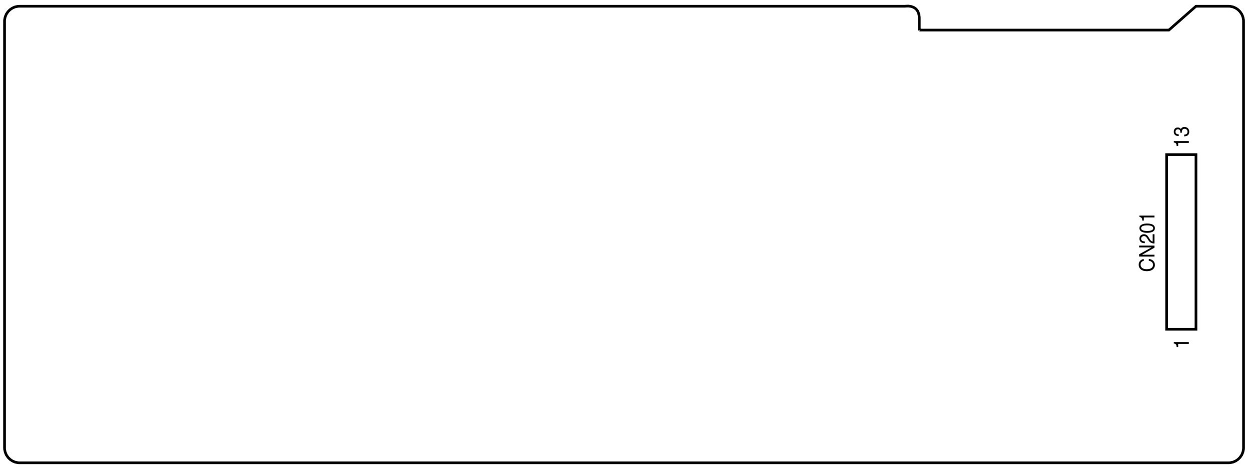
Fig. 7-10.

7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

MB-108 BOARD (Side A)



POWER BOARD (Side A)



MEMO

SECTION 8
REPAIR PARTS LIST

8-1. EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts of Color Cabinet's Color

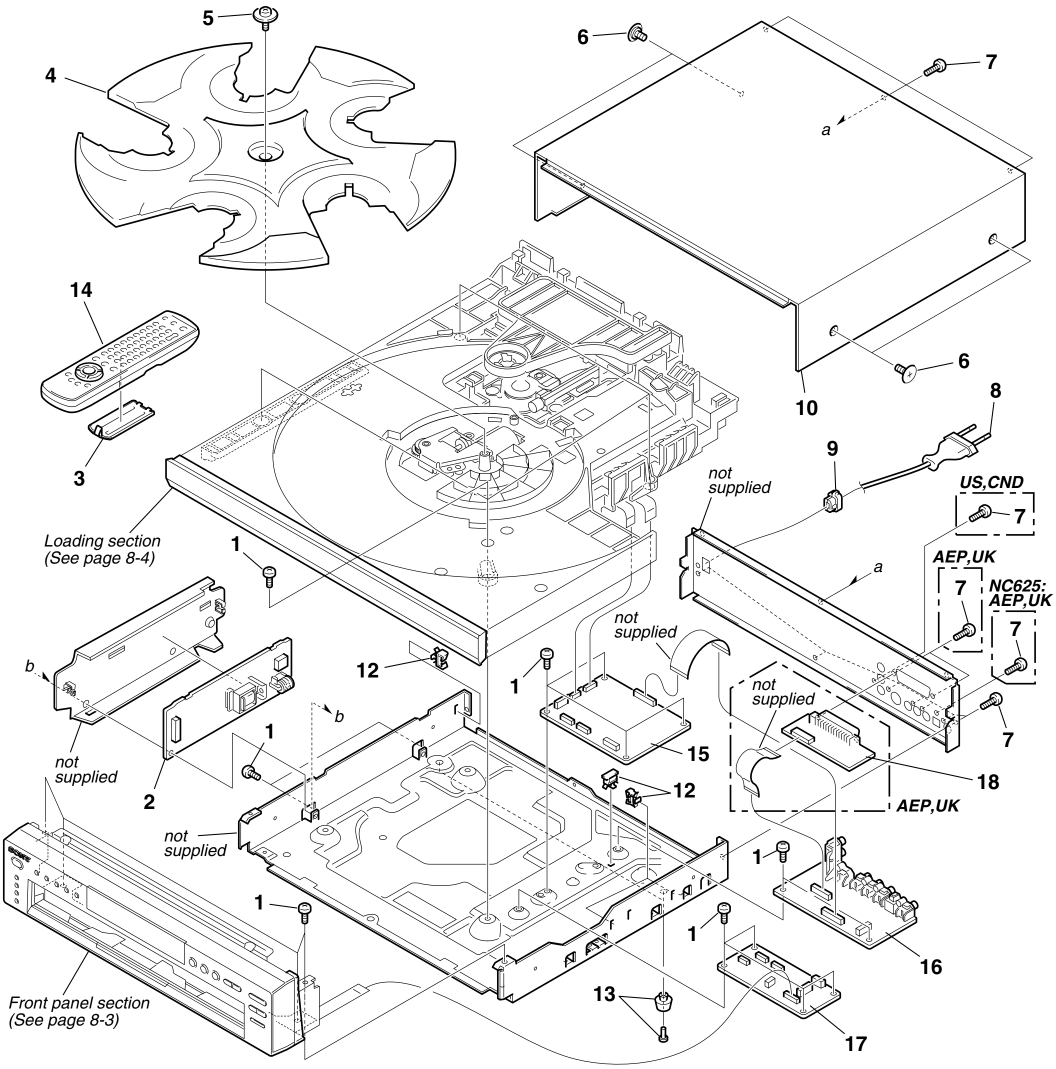
- Abbreviation

US	: USA model
CND	: Canadian model
PX	: PX model
E	: Latin model
MX	: Mexico model
AEP	: AEP model
UK	: UK model
SP	: Singapore model
AUS	: Australia model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

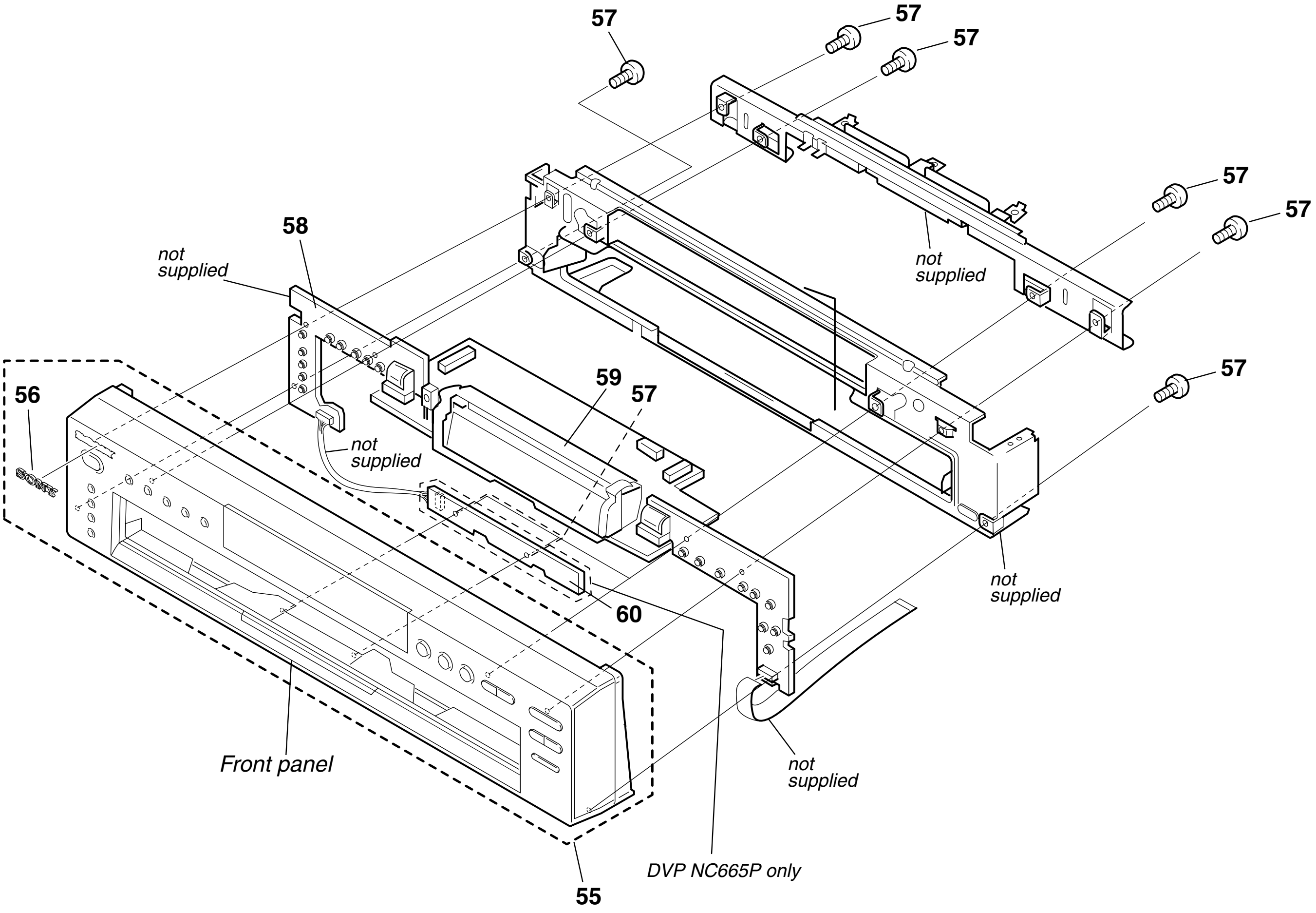
8-1-1. OVERALL SECTION



Ref. No.	Part No.	Description	Remarks
1	3-970-608-01	SUMITITE (B3), +BV	
⚠ 2	1-468-743-11	POWER BLOCK (NC625:PX,E,AEP,UK,AUS,SP)	
⚠ 2	1-468-751-11	POWER BLOCK (NC625:US,CND,MX/NC665P)	
3	3-071-119-11	COVER, BATTERY (FOR RMT-D154A/D155A/D155P)	
4	3-074-717-01	TRAY	
5	4-218-252-51	SCREW (+PTPWH M2.6), FLOATING	
6	3-070-883-01	SCREW, TAPPING (NC625:US,CND,PX,AUS/NC665P:US):BLACK	
6	3-070-883-11	SCREW, TAPPING (NC625:E,AEP,UK,AUS/NC665P:US):SILVER	
7	3-970-608-51	SUMITITE (B3), +BV	
⚠ 8	1-575-651-21	CORD, POWER (NC625:PX,E,AEP,SP)	
⚠ 8	1-769-744-92	POWER BLOCK (NC625:UK)	
⚠ 8	1-783-531-32	CORD, POWER (NC625:US,CND,MX/NC665P)	
⚠ 8	1-790-588-12	CORD, POWER (NC625:AUS)	
9	3-073-182-02	BUSHING, CODE	
10	3-079-683-21	CASE, UPPER (NC625:US,CND,PX,AUS/NC665P:US)	BLACK
	3-079-683-31	CASE, UPPER (NC625: AEP,UK,AUS/NC665P:UD,CND,E,MX,SP)	SILVER
13	3-957-819-01	FOOT	
14	1-477-725-21	REMOTE COMMANDER(RMT-D155A) (NC665P)	
14	1-477-725-41	REMOTE COMMANDER (RMT-D155P) (NC625:AEP,UK,SP,AUS)	
14	1-477-725-11	REMOTE COMMANDER (RMT-D154A) (NC625:US,CND,PX,E,MX)	
15	A-6061-734-A	MB-108 BOARD COMPLETE (NC625:AUS)	
	A-6061-747-A	MB-108 BOARD COMPLETE (NC625:SP)	
	A-6061-758-A	MB-108 BOARD COMPLETE (NC625:E)	
	A-6061-753-A	MB-108 BOARD COMPLETE (NC625:MX)	
	A-6061-773-A	MB-108 BOARD COMPLETE (NC625:UK,AEP)	
	A-6061-813-A	MB-108 BOARD COMPLETE(NC625:PX,CND,US)	
	A-6061-782-A	MB-108 BOARD COMPLETE (NC665P)	
16	A-6061-745-A	AV-072 BOARD COMPLETE (NC625:AUS,SP)	
	A-6061-809-A	AV-072 BOARD COMPLETE (NC625:E,MX,PX,CND,US)	
	A-6061-771-A	AV-072 BOARD COMPLETE(NC625:UK,AEP)	
	A-6061-780-A	AV-072 BOARD COMPLETE (NC665P)	
17	A-6061-811A	DV-034 BOARD COMPLETE	
18	A-6060-677-A	ER-14 BOARD COMPLETE(NC625:AEP,UK)	

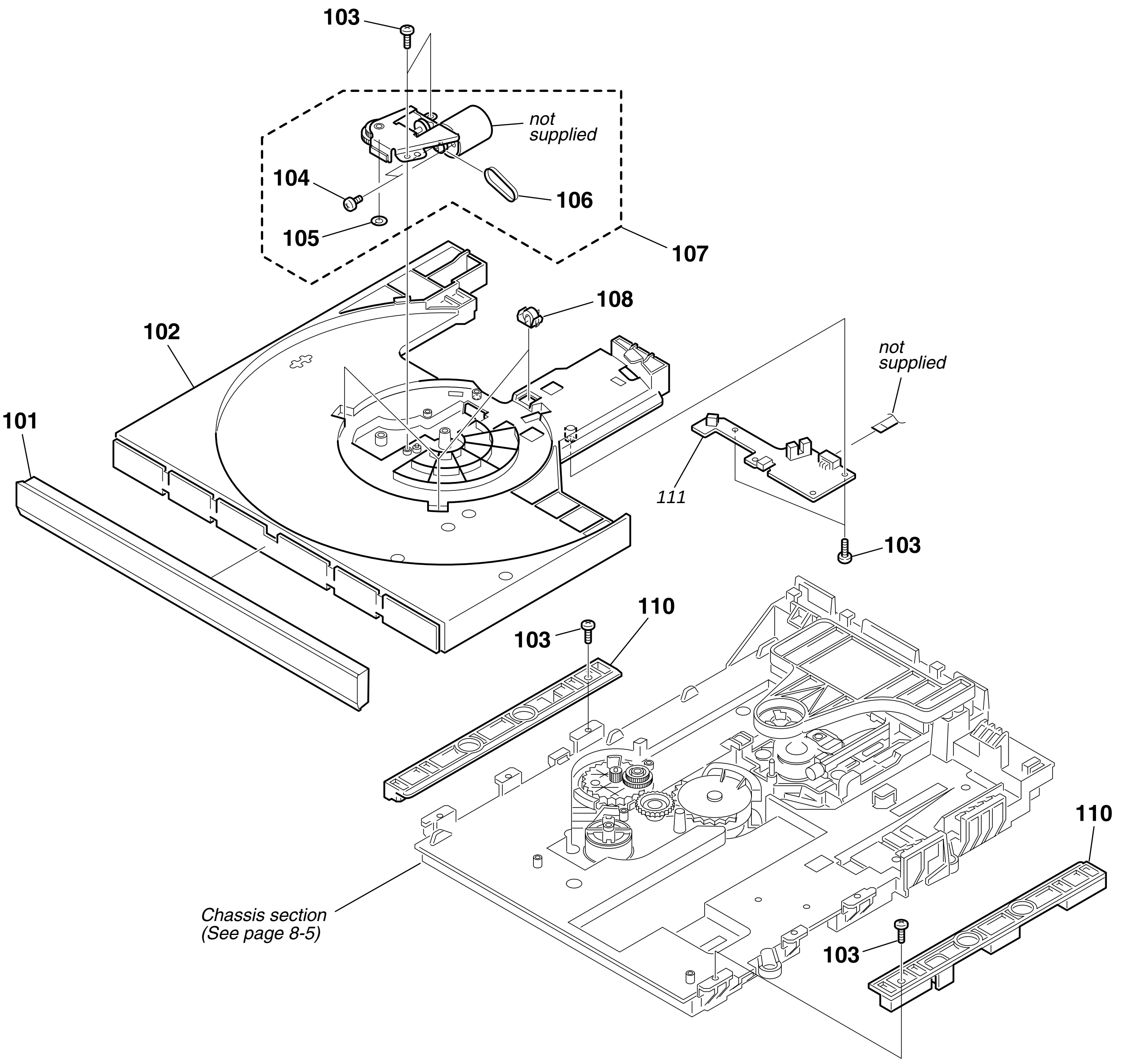
Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remarks
55	X-3952-993-1	FRONT PANEL ASSY (B-B) (NC625:US,CND,PX,AUS):BLACK	
55	X-3952-994-2	FRONT PANEL ASSY (B-S) (NC625:E,AEP,UK,SP,AUS,MX):SILVER	
55	X-3952-995-1	FRONT PANEL ASSY (NC665P:US):BLACK	
55	X-3952-996-2	FRONT PANEL ASSY (NC665P:US,CND):	SILVER
56	3-943-995-01	EMBLEM (NO.5), SONY (NC625:US,CND,PX,AUS/NC665P:US):BLACK	
56	3-943-995-31	EMBLEM (NO.5), SONY (NC625:MX,E,AEP,UK,SP,AUS/ NC665P:US,CND):SILVER	
57	4-951-620-01	SCREW (2.6X8), +BVTP	
59	A-6061-818-A	IF-099 BOARD COMPLETE(NC625)	
	A-6061-787-A	IF-099 BOARD COMPLETE(NC665P)	

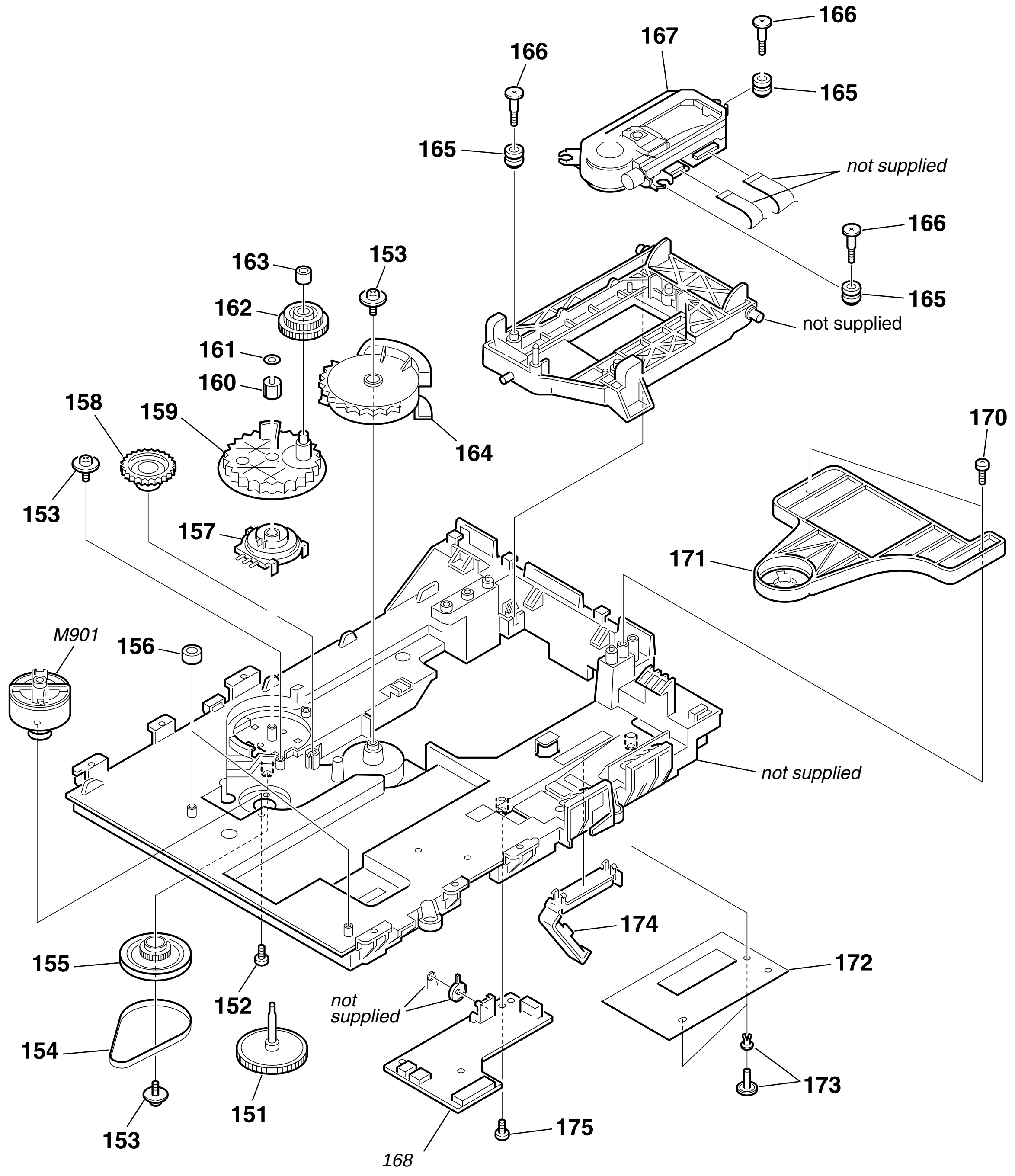
8-1-3. LOADING SECTION



Ref. No.	Part No.	Description	Remarks
101	X-3953-084-1	COVER ASSY, TRAY (NC625:US,CND,PX,AUS:BLACK)	
101	X-3953-085-1	COVER ASSY, TRAY (NC625:AEP,UK,AUS,E,MX,SP/ NC665P:US,CND:SILVER)	
101	X-3953-086-1	COVER, TRAY : BLACK (NC665P:US)	
102	3-074-716-01	TABLE	
103	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	

Ref. No.	Part No.	Description	Remarks
104	7-682-544-01	SCREW +P 3X3	
105	3-325-697-21	WASHER	
106	3-074-725-01	BELT, TD	
107	A-6060-640-A	UNIT ASSY, TD	
110	3-074-737-01	PLATE(GUIDE)	
111	A-6060-642-A	SE-130 BOARD COMPLETE	

8-1-4. CHASSIS SECTION



Ref. No.	Part No.	Description	Remarks
151	3-074-742-01	GEAR (SHAFT)	
152	7-621-259-25	SCREW +P 2.6X4	
153	4-218-252-51	SCREW (+PTPWH M2.6), FLOATING	
154	3-074-745-01	BELT (LOADING)	
155	3-074-744-01	GEAR (LOADING A)	
156	4-951-619-01	CUSHION (A)	
157	X-3952-380-1	ENCODER ASSY	
158	3-074-735-01	GEAR (IDLER)	
159	3-074-738-01	GEAR (SWING)	
160	3-074-741-01	GEAR (LOADING B)	
161	3-016-533-01	WASHER (FR), STOPPER	
162	3-074-740-01	GEAR (LOADING C)	
163	3-074-739-01	COLLAR (SWING)	

Ref. No.	Part No.	Description	Remarks
164	3-074-736-01	GEAR (CHUCK)	
165	3-053-847-11	INSULATOR	
166	3-074-729-01	SCREW, INS	
167	A-6061-908-A	KHM-290AAA SERVICE ASSY	
168	A-6060-643-A	MD-94 BOARD COMPLETE	
170	3-970-608-51	SUMITITE (B3), +BV	
171	A-6060-647-B	CHUCK ASSY	
172	3-074-731-01	SHEET (FFC)	
173	3-531-576-11	RIVET	
174	3-074-747-01	CLAMP (FFC)	
175	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
M901	X-3952-378-1	MOTOR ASSY, LOADING	

AV-72

8-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: μF
- COILS
  uH: μH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...
- Abbreviation

CND : Canadian model
PX : PX model
E : Latin model
MX : Mexican model
AEP : AEP model

SP : Singapore model
AUS : Australia model

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque 0 sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remark
*	A-6061-745-A	AV-072 BOARD COMPLETE (NC625:AUS,SP) *********************				
*	A-6061-771-A	AV-072 BOARD COMPLETE (NC625:UK,AEP) *********************				
*	A-6061-780-A	AV-072 BOARD COMPLETE (NC665P) *********************				
*	A-6061-809-A	AV-072 BOARD COMPLETE (NC625:US,CND,PX,MX,E) *********************				
		<CAPACITOR>				
C101	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C102	1-126-947-11	ELECT	47UF	20.00%	25V	
C107	1-104-660-91	ELECT	47UF	20.00%	16V	
C109	1-165-176-11	CERAMIC CHIP	0.047UF	10.00%	16V	
C110	1-104-660-91	ELECT	47UF	20.00%	16V	
C111	1-104-660-91	ELECT	47UF	20.00%	16V	
C112	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V	
C113	1-104-660-91	ELECT	47UF	20.00%	16V	
C114	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V	
C201	1-164-739-11	CERAMIC CHIP	560PF	5.00%	50V	
C202	1-164-739-11	CERAMIC CHIP	560PF	5.00%	50V	
C203	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V	
C204	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V	
C205	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V	
C206	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V	
C207	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C208	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C209	1-126-960-11	ELECT	1UF	20.00%	50V	
C210	1-104-660-91	ELECT	47UF	20.00%	16V	
C211	1-104-660-91	ELECT	47UF	20.00%	16V	
C212	1-126-960-91	ELECT	1UF	20.00%	50V	(NC625:UK,AEP)
C213	1-126-934-11	ELECT	220UF	20.00%	16V	
C215	1-164-230-91	CERAMIC CHIP	220PF	5.00%	50V	(NC625:AUS,SP,UK,AEP)
C216	1-164-230-91	CERAMIC CHIP	220PF	5.00%	50V	(NC625:AUS,SP,UK,AEP)
C222	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C223	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C224	1-104-660-91	ELECT	47UF	20.00%	16V	
C227	1-104-660-91	ELECT	47UF	20.00%	16V	(NC625:AUS,SP/NC665P)
C228	1-104-660-91	ELECT	47UF	20.00%	16V	
C229	1-104-660-91	ELECT	47UF	20.00%	16V	
C244	1-126-947-11	ELECT	47UF	20.00%	35V	
		<CONNECTOR>				
CN102	1-815-149-11	CONNECTOR, FPC/FFC(1MM PIC)21P				(NC625:UK,AEP)
CN202	1-568-934-11	PIN, CONNECTOR 7P				
CN203	1-815-385-11	CONNECTOR, FPC/FFC 25P				
		<DIODE>				
D108	8-719-071-15	DIODE HZM6.8ZWA1TL				
D109	8-719-071-15	DIODE HZM6.8ZWA1TL				
D201	8-719-914-43	DIODE DAN202K-T-146				
D202	8-719-914-45	DIODE DAP202K-T-146				
D203	8-719-914-45	DIODE DAP202K-T-146				(NC625:UK,AEP)
D204	8-719-988-61	DIODE 1SS355TE-17				
		<IC>				
IC102	8-759-826-45	IC LA73050-TLM				(NC625:AUS,SP,US,CND,PX,MX,E)
IC102	8-759-826-46	IC LA73051-TLM				(NC625:UK,AEP)
IC102	6-701-820-01	IC LA73053-TL M-E				(NC665P)
IC103	8-759-662-86	IC NJM79M05DL1A(TE2)				
IC201	6-701-937-01	IC TJM4558CDT				
IC203	8-759-711-59	IC NJM78L05UA-TE1				
IC204	6-600-185-01	IC GP1FA550TZ				(NC625:AUS,SP/NC665P)
		<JACK>				
J102	1-817-402-11	JACK, PIN 3P				(NC625:AUS,SP,E,MX,PX,US,CND/NC665P)
J103	1-794-198-11	CONNECTOR, S TERMINAL				
J104	1-815-358-11	JACK, PIN (3P)				
J201	1-793-446-21	JACK, PIN 1P				

Ref. No.	Part No.	Description				Remark
		<JUMPER RESISTOR>				
JR100	1-216-295-00	SHORT CHIP	0			
JR101	1-216-295-00	SHORT CHIP	0			
JR102	1-216-295-00	SHORT CHIP	0			
JR103	1-216-295-00	SHORT CHIP	0			
JR105	1-216-295-00	SHORT CHIP	0			
JR106	1-216-295-00	SHORT CHIP	0			
JR107	1-216-295-00	SHORT CHIP	0			
JR108	1-216-295-00	SHORT CHIP	0			
JR109	1-216-295-00	SHORT CHIP	0			
JR110	1-216-295-00	SHORT CHIP	0			
JR111	1-216-295-00	SHORT CHIP	0			
JR112	1-216-295-00	SHORT CHIP	0			
JR113	1-216-295-00	SHORT CHIP	0			
JR114	1-216-295-00	SHORT CHIP	0			
JR115	1-216-295-00	SHORT CHIP	0			
JR200	1-216-295-00	SHORT CHIP	0			
JR201	1-216-295-00	SHORT CHIP	0			
JR202	1-216-295-00	SHORT CHIP	0			
JR203	1-216-295-00	SHORT CHIP	0			
JR204	1-216-295-00	SHORT CHIP	0			
JR205	1-216-295-00	SHORT CHIP	0			
JR206	1-216-295-00	SHORT CHIP	0			
JR207	1-216-295-00	SHORT CHIP	0			
JR208	1-216-295-00	SHORT CHIP	0			
JR209	1-216-295-00	SHORT CHIP	0			
JR210	1-216-295-00	SHORT CHIP	0			
		<SHORT>				
JS101	1-216-295-00	SHORT CHIP	0			
		<COIL>				
L101	1-412-064-11	INDUCTOR	100UH			
		<TRANSISTOR>				
Q104	8-729-421-17	TRANSISTOR UN2213-TX				
Q105	8-729-424-08	TRANSISTOR UN2111-TX				
Q106	8-729-230-47	TRANSISTOR 2SA1162-YG-TE85L				(NC625:AEP,UK)
Q201	8-729-010-08	TRANSISTOR MSB710-RT1				
Q202	8-729-024-89	TRANSISTOR MUN2213T1				
Q203	8-729-010-25	TRANSISTOR MSD601-RT1				
Q204	8-729-424-70	TRANSISTOR UN2217-TX				
Q205	8-729-010-05	TRANSISTOR MSB709-RT1				
Q206	8-729-024-89	TRANSISTOR MUN2213T1				(NC625:UK,AEP)
Q207	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO				
Q208	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO				
Q209	8-729-424-70	TRANSISTOR UN2217-TX				(NC625:UK,AEP)
Q210	8-729-010-05	TRANSISTOR MSB709-RT1				(NC625:UK,AEP)
Q211	8-729-010-25	TRANSISTOR MSD601-RT1				
Q216	8-729-010-05	TRANSISTOR MSB709-RT1				
		<RESISTOR>				
R121	1-216-061-91	RES-CHIP	3.3K	5%	1/10W	
R122	1-216-049-91	RES-CHIP	1K	5%	1/10W	(NC625:UK,AEP)
R126	1-216-021-91	RES-CHIP	68	5%	1/10W	(EXCEPT NC625:UK,AEP)
R127	1-216-021-91	RES-CHIP	68	5%	1/10W	(EXCEPT NC625:UK,AEP)
R128	1-216-021-91	RES-CHIP	68	5%	1/10W	(EXCEPT NC625:UK,AEP)
R129	1-216-073-91	RES-CHIP	10K	5%	1/10W	
R130	1-216-021-00	RES-CHIP	68	5%	1/10W	
R133	1-216-021-00	RES-CHIP	68	5%	1/10W	
R134	1-216-021-00	RES-CHIP	68	5%	1/10W	
R153	1-215-860-11	METAL OXIDE	33	5%	1W	
R154	1-215-860-11	METAL OXIDE	33	5%	1W	
R201	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W	
R202	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W	
R203	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W	
R204	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W	
R205	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W	
R206	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W	
R207	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	
R208	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	
R209	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	
R210	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	
R211	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W	
R212	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W	
R213	1-216-065-91	RES-CHIP	4.7K	5%	1/10W	
R214	1-216-065-91	RES-CHIP	4.7K	5%	1/10W	(EXCEPT NC625:UK,AEP)
R216	1-216-067-00	RES-CHIP	5.6K	5%	1/10W	
R217	1-216-073-91	RES-CHIP	10K	5%	1/10W	
R218	1-216-097-11	RES-CHIP	100K	5%	1/10W	
R219	1-216-105-91	RES-CHIP	220K	5%	1/10W	
R220	1-216-041-00	RES-CHIP	470	5%	1/10W	
R221	1-216-073-91	RES-CHIP	10K	5%	1/10W	
R222	1-216-073-91	RES-CHIP	10K	5%	1/10W	
R224	1-216-073-91	RES-CHIP	10K	5%	1/10W	
R225	1-216-089-11	RES-CHIP	47K	5%	1/10W	
R226	1-216-041-00	RES-CHIP	470	5%	1/10W	
R227	1-216-041-00	RES-CHIP	470	5%	1/10W	
R228	1-216-073-91	RES-CHIP	10K	5%	1/10W	
R229	1-216-089-11	RES-CHIP	47K	5%	1/10W	
R230	1-216-089-11	RES-CHIP	47K	5%	1/10W	
R231	1-216-073-91	RES-CHIP	10K	5%	1/10W	(NC625:UK,AEP)
R232	1-216-073-91	RES-CHIP	10K	5%	1/10W	(NC625:UK,AEP)
R233	1-216-089-11	RES-CHIP	47K	5%	1/10W	(NC625:UK,AEP)
R234	1-216-065-91	RES-CHIP	4.7K	5%	1/10W	
R235	1-216-065-91	RES-CHIP	4.7K	5%	1/10W	(EXCEPT NC625:UK,AEP)
R236	1-216-073-91	RES-CHIP	10K	5%	1/10W	(NC625:UK,AEP)
R237	1-216-065-91	RES-CHIP	4.7K	5%	1/10W	(NC625:UK,AEP)
R238	1-216-097-11	RES-CHIP	100K	5%	1/10W	
R239	1-216-097-11	RES-CHIP	100K	5%	1/10W	(NC625:UK,AEP)
R240	1-216-041-00	RES-CHIP	470	5%	1/10W	
R241	1-216-041-00	RES-CHIP	470	5%	1/10W	
R249	1-216-033-00	RES-CHIP	220	5%	1/10W	
R251	1-216-021-00	RES-CHIP	68	5%	1/10W	

Ref. No.	Part No.	Description			Remark
R252	1-216-073-91	RES-CHIP	10K	5%	1/10W
R253	1-216-049-11	RES-CHIP	1K	5%	1/10W
R254	1-216-049-11	RES-CHIP	1K	5%	1/10W
R256	1-216-049-11	RES-CHIP	1K	5%	1/10W

Ref. No.	Part No.	Description			Remark
*	A-6061-811-A	DV-034BM BOARD COMPLETE			
		************************			
		<CAPACITOR>			
C303	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C304	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C305	1-124-234-00	ELECT	22UF	20.00%	16V
C307	1-115-339-11	CERAMIC CHIP	0.1UF	10.00%	50V
C308	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C309	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C310	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
		<CONNECTOR>			
CN305	1-568-938-11	PIN, CONNECTOR 11P			
CN306	1-568-955-11	PIN, CONNECTOR 6P			
CN307	1-785-530-11	PIN, CONNECTOR (PC BOARD) 10P			
		<DIODE>			
D301	8-719-069-54	DIODE UDZSTE-175.1B			
		<FERRITE BEAD>			
FB301	1-216-295-00	SHORT CHIP	0		
FB302	1-216-295-00	SHORT CHIP	0		
FB303	1-216-295-00	SHORT CHIP	0		
FB304	1-216-295-00	SHORT CHIP	0		
FB305	1-216-295-00	SHORT CHIP	0		
FB309	1-216-295-00	SHORT CHIP	0		
FB310	1-216-295-00	SHORT CHIP	0		
		<IC>			
IC303	8-759-598-69	IC BA6956AN			
		<JUMPER RESISTOR>			
JR301	1-216-295-00	SHORT CHIP	0		
JR302	1-216-295-00	SHORT CHIP	0		
JR303	1-216-295-00	SHORT CHIP	0		
JR304	1-216-295-00	SHORT CHIP	0		
JR305	1-216-295-00	SHORT CHIP	0		
JR306	1-216-295-00	SHORT CHIP	0		
JR307	1-216-295-00	SHORT CHIP	0		
JR308	1-216-295-00	SHORT CHIP	0		
JR309	1-216-295-00	SHORT CHIP	0		
JR310	1-216-295-00	SHORT CHIP	0		
JR311	1-216-295-00	SHORT CHIP	0		
JR312	1-216-295-00	SHORT CHIP	0		
JR313	1-216-295-00	SHORT CHIP	0		
		<TRANSISTOR>			
Q303	8-729-230-49	TRANSISTOR 2SC2712-YG			
		<RESISTOR>			
R311	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R312	1-216-049-11	RES-CHIP	1K	5%	1/10W
R313	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R324	1-216-033-00	RES-CHIP	220	5%	1/10W
R325	1-216-091-00	RES-CHIP	56K	5%	1/10W
R326	1-216-049-11	RES-CHIP	1K	5%	1/10W
R327	1-216-025-11	RES-CHIP	100	5%	1/10W

Ref. No.	Part No.	Description			Remark
		FR-197 BOARD COMPLETE			
		*****************************			
		<CONNECTOR>			
CN603	1-750-186-11	CONNECTOR, BOARD TO BOARD 6P			
		<JUMPER RESISTOR>			
JR601	1-216-295-00	SHORT CHIP	0		
		<RESISTOR>			
R601	1-216-081-00	RES-CHIP	22K	5%	1/10W
R602	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R603	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R604	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R605	1-216-081-00	RES-CHIP	22K	5%	1/10W
R606	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R607	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R608	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
		<SWITCH>			
S601	1-762-196-21	SWITCH, TACT			
S602	1-762-196-21	SWITCH, TACT			
S603	1-762-196-21	SWITCH, TACT			
S604	1-762-196-21	SWITCH, TACT			
S605	1-762-196-21	SWITCH, TACT			
S606	1-762-196-21	SWITCH, TACT			
S607	1-762-196-21	SWITCH, TACT			
S608	1-762-196-21	SWITCH, TACT			
S609	1-762-196-21	SWITCH, TACT			
S610	1-762-196-21	SWITCH, TACT			

Ref. No.	Part No.	Description			Remark
*	A-6061-818-A	IF-099 BOARD COMPLETE (NC625) *****************************			
*	A-6061-787-A	IF-099 BOARD COMPLETE (NC665P) ******************************			
		<CAPACITOR>			
C418	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C418	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C420	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C420	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C423	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C423	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C424	1-164-004-11	CERAMIC CHIP	0.1UF	10.00%	25V
C426	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C427	1-164-004-11	CERAMIC CHIP	0.1UF	10.00%	25V
C428	1-164-004-11	CERAMIC CHIP	0.1UF	10.00%	25V
C431	1-162-021-91	CERAMIC CHIP	0.01UF	10.00%	25V
C432	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C440	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C440	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C441	1-124-589-11	ELECT	47UF	20.00%	16V
C471	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C475	1-124-589-91	ELECT	47UF	20.00%	16V
C476	1-124-589-91	ELECT	47UF	20.00%	16V
C478	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C479	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C480	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C481	1-125-972-91	ELECT	100UF	20.00%	16V
C482	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C483	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C484	1-128-111-11	CAP, ELECT 100MF			
C486	1-128-111-11	CAP, ELECT 100MF			
C487	1-124-248-91	ELECT	22UF	20.00%	25V
C488	1-124-248-91	ELECT	22UF	20.00%	25V
C490	1-162-974-11	CERAMIC CHIP	0.01UF	50V	
		<CONNECTOR>			
CN401	1-750-195-11	CONNECTOR, BOARD TO BOARD 6P			
CN402	1-506-486-11	PIN, CONNECTOR 7P			
CN403	1-568-944-11	PIN, CONNECTOR 6P			
CN404	1-695-821-11	CONNECTOR, BOARD TO BOARD 12P			
CN471	1-785-339-11	PIN, CONNECTOR(LIGHT ANGLE)13P			
		<TERMINAL>			
ET472	1-537-738-21	TERMINAL, EARTH			
ET473	1-537-738-21	TERMINAL, EARTH			
		<FERRITE BEAD>			
FB471	1-469-324-21	FERRITE	0UH		
		<IC>			
IC404	6-802-952-01	IC TMP86CK74AFG-4K89(M)			
IC406	6-703-745-01	IC GP1UE28SYKOF			

Ref. No.	Part No.	Description		Remark
IC407	6-703-743-01	IC AN13992A		
IC408	6-703-742-01	IC S-80830CNUA-B8P-T2		
IC473	6-701-875-01	IC LMS8117ADTX-1.8/NOPB		
IC474	8-759-666-12	IC MM1385DNLE		
		<JUMPER RESISTOR>		
JR402	1-216-295-00	SHORT CHIP	0	
JR403	1-216-295-00	SHORT CHIP	0	
JR404	1-216-295-00	SHORT CHIP	0	
JR405	1-216-295-00	SHORT CHIP	0	
JR406	1-216-295-00	SHORT CHIP	0	
JR407	1-216-295-00	SHORT CHIP	0	
JR409	1-216-295-00	SHORT CHIP	0	
JR410	1-216-295-00	SHORT CHIP	0	
JR411	1-216-295-00	SHORT CHIP	0	
JR412	1-216-295-00	SHORT CHIP	0	
JR413	1-216-295-00	SHORT CHIP	0	
JR414	1-216-295-00	SHORT CHIP	0	
JR415	1-216-295-00	SHORT CHIP	0	
JR416	1-216-295-00	SHORT CHIP	0	
JR417	1-216-295-00	SHORT CHIP	0	
JR418	1-216-295-00	SHORT CHIP	0	
JR419	1-216-295-00	SHORT CHIP	0	
JR420	1-216-295-00	SHORT CHIP	0	
JR421	1-216-295-00	SHORT CHIP	0	
JR422	1-216-295-00	SHORT CHIP	0	
JR423	1-216-295-00	SHORT CHIP	0	
JR424	1-216-295-00	SHORT CHIP	0	
JR425	1-216-295-00	SHORT CHIP	0	
JR426	1-216-295-00	SHORT CHIP	0	
JR427	1-216-295-00	SHORT CHIP	0	
JR428	1-216-295-00	SHORT CHIP	0	
JR429	1-216-295-00	SHORT CHIP	0	
JR430	1-216-295-00	SHORT CHIP	0	
JR431	1-216-295-00	SHORT CHIP	0	
JR432	1-216-295-00	SHORT CHIP	0	
JR433	1-216-295-00	SHORT CHIP	0	
JR434	1-216-295-00	SHORT CHIP	0	
JR436	1-216-295-00	SHORT CHIP	0	
JR437	1-216-295-00	SHORT CHIP	0	
JR438	1-216-295-00	SHORT CHIP	0	
JR439	1-216-295-00	SHORT CHIP	0	
JR440	1-216-295-00	SHORT CHIP	0	
JR441	1-216-295-00	SHORT CHIP	0	
JR442	1-216-295-00	SHORT CHIP	0	
JR443	1-216-295-00	SHORT CHIP	0	
JR444	1-216-295-00	SHORT CHIP	0	
JR445	1-216-295-00	SHORT CHIP	0	
JR446	1-216-295-00	SHORT CHIP	0	
JR447	1-216-295-00	SHORT CHIP	0	
JR448	1-216-295-00	SHORT CHIP	0	
JR449	1-216-295-00	SHORT CHIP	0	
JR450	1-216-295-00	SHORT CHIP	0	
JR451	1-216-295-00	SHORT CHIP	0	
		<FLUORESCENT INDICATOR>		
ND401	1-518-878-11	VACUUM FLUORESCENT DISPLAY		

IF-099 **MB-108**

Ref. No.	Part No.	Description			Remark
		<IC LINK>			
⚠PS471	1-576-508-21	IC LINK		0.7A	50V
⚠PS472	1-576-508-21	IC LINK		0.7A	50V
		<TRANSISTOR>			
Q472	8-729-048-28	TRANSISTOR 2SD1766-T100-QR			
Q473	8-729-424-08	TRANSISTOR UN2111-TX			
		<RESISTOR>			
R407	1-216-013-00	RES-CHIP	33	5%	1/10W
R408	1-216-073-91	RES-CHIP	10K	5%	1/10W
R409	1-216-073-91	RES-CHIP	10K	5%	1/10W
R418	1-216-027-00	RES-CHIP	120	5%	1/10W
R428	1-216-025-11	RES-CHIP	100	5%	1/10W
R429	1-216-097-11	RES-CHIP	100K	5%	1/10W
R430	1-216-295-91	SHORT CHIP	0		(NC625)
R431	1-216-097-91	RES-CHIP	100K	5%	1/10W (NC665P)
R432	1-216-097-11	RES-CHIP	100K	5%	1/10W
R434	1-216-097-11	RES-CHIP	100K	5%	1/10W
R437	1-216-073-91	RES-CHIP	10K	5%	1/10W
R442	1-216-025-11	RES-CHIP	100	5%	1/10W
R443	1-216-025-11	RES-CHIP	100	5%	1/10W
R444	1-216-025-11	RES-CHIP	100	5%	1/10W
R445	1-216-025-11	RES-CHIP	100	5%	1/10W
R446	1-216-025-11	RES-CHIP	100	5%	1/10W
R447	1-216-025-11	RES-CHIP	100	5%	1/10W
R448	1-216-025-11	RES-CHIP	100	5%	1/10W
R453	1-218-611-11	METAL CHIP	5.6	5%	1W
R455	1-218-627-11	METAL CHIP	120	5%	1W
R456	1-218-627-11	METAL CHIP	120	5%	1W
R459	1-216-298-00	RES-CHIP	2.2	5%	1/10W
R460	1-216-073-91	RES-CHIP	10K	5%	1/10W
R475	1-216-073-91	RES-CHIP	10K	5%	1/10W
R476	1-216-055-00	RES-CHIP	1.8K	5%	1/10W
R477	1-216-055-00	RES-CHIP	1.8K	5%	1/10W
R496	1-216-017-91	RES-CHIP	47	5%	1/10W
R497	1-216-097-11	RES-CHIP	100K	5%	1/10W
		<VIBRATOR>			
X401	1-781-472-21	VIBRATOR, CERAMIC			

Ref. No.	Part No.	Description			Remark
*	A-6061-734-A	MB-108 BOARD COMPLETE (NC625:AUS) **********************			
*	A-6061-747-A	MB-108 BOARD COMPLETE (NC625:SP) **********************			
*	A-6061-758-A	MB-108 BOARD COMPLETE (NC625:E) **********************			
*	A-6061-753-A	MB-108 BOARD COMPLETE (NC625:MX) **********************			
*	A-6061-773-A	MB-108 BOARD COMPLETE (NC625:UK,AEP) **********************			
*	A-6061-813-A	MB-108 BOARD COMPLETE (NC625:PX,CND,US) **********************			
*	A-6061-782-A	MB-108 BOARD COMPLETE (NC665P) **********************			
		<CAPACITOR>			
C102	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C103	1-126-209-11	ELECT CHIP	100UF	20.00%	4V
C104	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C105	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C106	1-162-914-91	CERAMIC CHIP	9PF	0.50PF	50V (NC625)
C106	1-162-916-91	CERAMIC CHIP	12PF	5.00%	50V (NC665P)
C107	1-162-915-91	CERAMIC CHIP	10PF	0.50PF	50V (NC625)
C107	1-162-916-91	CERAMIC CHIP	12PF	5.00%	50V (NC665P)
C108	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C109	1-126-209-11	ELECT CHIP	100UF	20.00%	4V
C110	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C114	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C118	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C120	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C121	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C122	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C125	1-126-607-11	ELECT CHIP	47UF	20.00%	4V
C126	1-126-206-11	ELECT CHIP	100UF	20.00%	6.3V
C127	1-126-204-11	ELECT CHIP	47UF	20.00%	16V
C128	1-126-246-11	ELECT CHIP	220UF	20.00%	4V
C129	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C130	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (NC625:AUS,UK,AEP,SP/NC665P)
C201	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C202	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C203	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C204	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C206	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C210	1-162-966-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C211	1-162-966-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C212	1-162-966-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C213	1-162-966-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C214	1-164-245-11	CERAMIC CHIP	0.015UF	10.00%	25V
C215	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C216	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C218	1-162-965-11	CERAMIC CHIP	0.0015UF	10.00%	50V
C219	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C220	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C221	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C225	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C226	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C228	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C229	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
C230	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C232	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C233	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C234	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C235	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C236	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C238	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C240	1-164-677-11	CERAMIC CHIP	0.033UF	10.00%	16V
C241	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C242	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C243	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C244	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C245	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C246	1-164-677-11	CERAMIC CHIP	0.033UF	10.00%	16V
C247	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C248	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C249	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C250	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C251	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C252	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C253	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C254	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C255	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C256	1-165-176-11	CERAMIC CHIP	0.047UF	10.00%	16V
C257	1-165-176-11	CERAMIC CHIP	0.047UF	10.00%	16V
C258	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C259	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C260	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C261	1-164-390-91	CERAMIC CHIP	330PF	5.00%	50V
C262	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C263	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C264	1-117-863-11	CERAMIC CHIP	0.47UF	10.00%	6.3V
C265	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C266	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C270	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C271	1-126-204-11	ELECT CHIP	47UF	20.00%	16V
C272	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C273	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C304	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C305	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C308	1-126-206-11	ELECT CHIP	100UF	20.00%	6.3V
C309	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C310	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C311	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C312	1-110-563-11	CERAMIC CHIP	0.068UF	10.00%	16V
C313	1-164-677-11	CERAMIC CHIP	0.033UF	10.00%	16V
C314	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C315	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C316	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C317	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C318	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C319	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C320	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C321	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C322	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C323	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C324	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C325	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C326	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C327	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V

Ref. No.	Part No.	Description			Remark
C328	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C329	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C330	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C331	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C332	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C333	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C334	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C335	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C337	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C338	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C339	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C340	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C343	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C344	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C401	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
					(EXCEPT NC665P)
C402	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C403	1-162-970-91	CERAMIC CHIP	0.01UF	10.00%	25V
					(EXCEPT NC665P)
C404	1-126-193-11	ELECT CHIP	1UF	20.00%	50V
C405	1-126-206-11	ELECT CHIP	100UF	20.00%	6.3V
					(EXCEPT NC665P)
C406	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C407	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C408	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C410	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C412	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C413	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C415	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C416	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C417	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C418	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C419	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C420	1-107-826-91	CERAMIC CHIP	0.1UF	10.00%	16V
					(EXCEPT NC665P)
C422	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C423	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C425	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C426	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C428	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C429	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C431	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C432	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C435	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C436	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C438	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C439	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C441	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
					(NC625:AUS,SP,AEP,UK/NC665P)
C442	1-162-970-91	CERAMIC CHIP	0.01UF	10.00%	25V
					(NC625:AUS,SP,AEP,UK/NC665P)
C446	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C447	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
					(NC625:AUS,SP,AEP,UK/NC665P)
C449	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C501	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
					(NC665P)
C502	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
					(NC665P)
C503	1-126-205-31	ELECT CHIP	47UF	20.00%	6.3V
					(NC665P)

MB-108

Ref. No.	Part No.	Description			Remark
C504	1-107-826-91	CERAMIC CHIP	0.1UF	10.00%	16V (NC665P)
C505	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (NC665P)
C506	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V (NC665P)
C507	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V (NC665P)
C508	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V (NC665P)
C509	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V (NC665P)
C510	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V (NC665P)
C511	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V (NC665P)
C512	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (NC665P)
C513	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (NC665P)
C514	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (NC665P)
C515	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V (NC665P)
C516	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (NC665P)
C517	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (NC665P)
C518	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V (NC665P)
C520	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V (NC665P)
C521	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V (NC665P)
C526	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V (NC665P)
C527	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V (NC665P)
C528	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (NC665P)
C529	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V (NC665P)
C530	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V (NC665P)
C531	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V (NC665P)
C532	1-164-315-91	CERAMIC CHIP	470PF	5.00%	50V (NC665P)
C533	1-164-315-91	CERAMIC CHIP	470PF	5.00%	50V (NC665P)
C534	1-164-173-91	CERAMIC CHIP	0.0039UF	10.00%	50V (NC665P)
C537	1-107-826-91	CERAMIC CHIP	0.1UF	10.00%	16V (NC665P)
C538	1-107-826-91	CERAMIC CHIP	0.1UF	10.00%	16V (NC665P)
C539	1-164-733-91	CERAMIC CHIP	820PF	10.00%	50V (NC665P)
C540	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V (NC665P)
C541	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V (NC665P)
C542	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V (NC665P)

Ref. No.	Part No.	Description			Remark
C543	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V (NC665P)
C544	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (NC665P)
C545	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (NC665P)
C546	1-107-826-91	CERAMIC CHIP	0.1UF	10.00%	16V (NC665P)
C601	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C602	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C603	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C604	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
		<CONNECTOR>			
CN102	1-770-154-11	PIN, CONNECTOR (PC BOARD) 6P			
CN201	1-774-766-21	CONNECTOR, FFC/FPC 11P			
CN202	1-779-353-21	CONNECTOR, FFC/FPC 5P			
CN203	1-815-507-21	CONNECTOR, FFC/FPC 26P			
CN601	1-774-769-11	CONNECTOR, FFC/FPC 25P			
		<FERRITE BEAD>			
FB103	1-400-382-11	FERRITE	0UH		
FB104	1-400-382-11	FERRITE	0UH		
FB105	1-400-382-11	FERRITE	0UH		
FB106	1-400-382-11	FERRITE	0UH		
FB107	1-469-324-21	FERRITE	0UH		
FB108	1-469-324-21	FERRITE	0UH		
FB109	1-400-382-11	FERRITE	0UH		
FB111	1-400-382-11	FERRITE	0UH		
FB602	1-469-784-21	FERRITE	0UH		(EXCEPT NC665P)
FB603	1-469-784-21	FERRITE	0UH		(EXCEPT NC665P)
		<FILTER>			
FL101	1-234-177-21	FERRITE	0UH		
FL103	1-234-177-21	FERRITE	0UH		
FL104	1-234-177-21	FERRITE	0UH		
FL105	1-234-177-21	FERRITE	0UH		
FL109	1-233-893-21	FILTER, CHIP EMI			
FL110	1-234-177-21	FERRITE	0UH		
FL201	1-234-177-21	FERRITE	0UH		
FL402	1-234-177-21	FERRITE	0UH		
FL404	1-234-177-21	FERRITE	0UH		
		<IC>			
IC101	8-759-699-33	IC CAT24WC16J-TE13			
IC103	6-701-877-01	IC SM8707EV-G-E2			
IC104	6-701-837-01	IC MB91307RPFV-G-BND-E1			
IC107	6-804-009-01	IC MR27V3202F-1P5TPZ04B			(NC625:AEP,UK,SP,AUS)
IC107	6-803-467-01	IC MR27V3202F-165TPZ04B			(NC625:US,CND,PX,MX,E)
IC107	6-804-010-01	IC MR27V3202F-1P6TPZ04B			(NC665)
IC108	6-701-874-01	IC IDT71V016SA15PH8(SCD2994)			(NC625:AEP,UK,SP,AUS/NC665P)
IC201	6-703-445-01	IC SP3726A			
IC202	6-701-878-01	IC FAN8034L			
IC301	6-701-876-01	IC CXD9703R			
IC302	6-702-302-01	IC TK11133CSCL-G			

Ref. No.	Part No.	Description				Remark
IC303	6-701-969-01	IC K4F151612D-UL60T				
IC401	6-702-300-01	IC TK11118CSCL-G				
IC402	6-702-302-01	IC TK11133CSCL-G				(EXCEPT NC665P)
IC403	8-752-416-45	IC CXD1935Q				
IC404	6-700-353-01	IC MT48LC1M16A1TG-6STR				
IC405	8-759-663-74	IC HY57V161610DTC-7TR				(NC625:AUS,SP,UK,AEP/NC665P)
IC501	6-702-301-01	IC TK11125CSCL-G				(NC665P)
IC502	6-701-814-01	IC CXD9698R				(NC665P)
IC503	8-759-663-74	IC HY57V161610DTC-7TR				(NC665P)
IC504	6-701-079-01	IC ADV7300AKST				(NC665P)
IC505	6-702-301-01	IC TK11125CSCL-G				(NC665P)
IC601	6-703-704-01	IC AK4381VT-E2				
		<COIL>				
L101	1-414-410-21	INDUCTOR	10UH			
L201	1-412-031-11	INDUCTOR	47UH			
L202	1-412-031-11	INDUCTOR	47UH			
		<TRANSISTOR>				
Q201	8-729-903-46	TRANSISTOR 2SB1132-T100-QR				
Q202	8-729-903-46	TRANSISTOR 2SB1132-T100-QR				
		<RESISTOR>				
R103	1-216-809-11	METAL CHIP	100	5%	1/10W	
R104	1-216-809-11	METAL CHIP	100	5%	1/10W	
R105	1-216-809-11	METAL CHIP	100	5%	1/10W	
R106	1-216-809-11	METAL CHIP	100	5%	1/10W	
R108	1-216-789-11	METAL CHIP	2.2	5%	1/10W	
R110	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R111	1-216-809-11	METAL CHIP	100	5%	1/10W	
R112	1-216-809-11	METAL CHIP	100	5%	1/10W	
R113	1-216-837-11	METAL CHIP	22K	5%	1/10W	
R114	1-216-864-11	SHORT CHIP	0			(EXCEPT NC665P)
R114	1-216-817-91	METAL CHIP				(NC665P)
R116	1-216-801-11	METAL CHIP	22	5%	1/10W	
R117	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R118	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R119	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R120	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R121	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R123	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R124	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R128	1-216-809-11	METAL CHIP	100	5%	1/10W	
R129	1-216-809-11	METAL CHIP	100	5%	1/10W	
R130	1-216-809-11	METAL CHIP	100	5%	1/10W	
R131	1-216-809-11	METAL CHIP	100	5%	1/10W	
R134	1-216-801-11	METAL CHIP	22	5%	1/10W	
R136	1-216-801-11	METAL CHIP	22	5%	1/10W	
R137	1-216-801-11	METAL CHIP	22	5%	1/10W	
R139	1-216-827-11	METAL CHIP	3.3K	5%	1/10W	
R141	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R150	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R156	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R157	1-216-864-11	SHORT CHIP	0			
R159	1-216-864-11	SHORT CHIP	0			
R160	1-216-864-11	SHORT CHIP	0			
R163	1-216-827-11	METAL CHIP	3.3K	5%	1/10W	
R164	1-216-075-00	RES-CHIP	12K	5%	1/10W	(NC625:UK,AEP)
R164	1-216-041-91	RES-CHIP	470	5%	1/10W	(NC625:AUS)
R164	1-216-033-00	RES-CHIP	220	5%	1/10W	(NC625:MX)
R164	1-216-081-91	RES-CHIP	22K	5%	1/10W	(NC625:E)
R164	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	(NC625:SP)
R165	1-216-827-11	METAL CHIP	3.3K	5%	1/10W	
R166	1-216-075-00	RES-CHIP	12K	5%	1/10W	(EXCEPT NC665P)
R166	1-216-069-00	RES-CHIP	6.8K	5%	1/10W	(NC665P)
R168	1-216-827-11	METAL CHIP	3.3K	5%	1/10W	
R169	1-216-089-11	RES-CHIP	47K	5%	1/10W	(NC625:UK,AEP)
R169	1-216-075-00	RES-CHIP	12K	5%	1/10W	(NC625:AUS,E,MX)
R169	1-216-081-00	RES-CHIP	22K	5%	1/10W	(NC625:SP)
R176	1-216-864-11	SHORT CHIP	0			
R177	1-216-833-11	METAL CHIP	10K	5%	1/10W	(NC625:AEP,UK,SP,AUS/NC665P)
R178	1-216-833-11	METAL CHIP	10K	5%	1/10W	(NC625:AEP,UK,SP,AUS/NC665P)
R180	1-216-809-11	METAL CHIP	100	5%	1/10W	
R181	1-216-864-11	SHORT CHIP	0			
R182	1-216-809-11	METAL CHIP	100	5%	1/10W	
R183	1-216-809-11	METAL CHIP	100	5%	1/10W	
R184	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R185	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R187	1-216-864-91	SHORT CHIP	0			(NC625:AEP,UK,SP,AUS/NC665P)
R201	1-216-813-11	METAL CHIP	220	5%	1/10W	
R202	1-216-813-11	METAL CHIP	220	5%	1/10W	
R203	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R204	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R205	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R206	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	
R207	1-216-809-11	METAL CHIP	100	5%	1/10W	
R210	1-216-815-11	METAL CHIP	330	5%	1/10W	
R211	1-216-809-11	METAL CHIP	100	5%	1/10W	
R212	1-216-809-11	METAL CHIP	100	5%	1/10W	
R213	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R214	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R215	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R216	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R217	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R218	1-216-846-11	METAL CHIP	120K	5%	1/10W	
R219	1-216-846-11	METAL CHIP	120K	5%	1/10W	
R220	1-216-847-11	METAL CHIP	150K	5%	1/10W	
R221	1-216-847-11	METAL CHIP	150K	5%	1/10W	
R222	1-216-842-11	METAL CHIP	56K	5%	1/10W	
R223	1-216-842-11	METAL CHIP	56K	5%	1/10W	
R224	1-216-850-11	METAL CHIP	270K	5%	1/10W	
R225	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R226	1-216-853-11	METAL CHIP	470K	5%	1/10W	
R227	1-216-846-11	METAL CHIP	120K	5%	1/10W	

MB-108

Ref. No.	Part No.	Description			Remark
R229	1-216-833-11	METAL CHIP	10K	5%	1/10W
R230	1-216-839-11	METAL CHIP	33K	5%	1/10W
R231	1-216-855-11	METAL CHIP	680K	5%	1/10W
R232	1-216-839-11	METAL CHIP	33K	5%	1/10W
R233	1-216-853-11	METAL CHIP	470K	5%	1/10W
R234	1-211-981-11	METAL CHIP	33	0.5%	1/10W
R235	1-216-809-11	METAL CHIP	100	5%	1/10W
R236	1-211-981-11	METAL CHIP	33	0.5%	1/10W
R238	1-216-839-11	METAL CHIP	33K	5%	1/10W
R239	1-216-839-11	METAL CHIP	33K	5%	1/10W
R240	1-216-839-11	METAL CHIP	33K	5%	1/10W
R241	1-216-839-11	METAL CHIP	33K	5%	1/10W
R242	1-216-849-11	METAL CHIP	220K	5%	1/10W
R243	1-216-853-11	METAL CHIP	470K	5%	1/10W
R244	1-216-821-11	METAL CHIP	1K	5%	1/10W
R245	1-216-841-11	METAL CHIP	47K	5%	1/10W
R246	1-216-809-11	METAL CHIP	100	5%	1/10W
R248	1-216-803-11	METAL CHIP	33	5%	1/10W
R249	1-216-803-11	METAL CHIP	33	5%	1/10W
R250	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R251	1-216-841-11	METAL CHIP	47K	5%	1/10W
R252	1-216-839-11	METAL CHIP	33K	5%	1/10W
R253	1-218-889-11	METAL CHIP	56K	0.5%	1/10W
R254	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R255	1-218-889-11	METAL CHIP	56K	0.5%	1/10W
R256	1-216-809-11	METAL CHIP	100	5%	1/10W
R259	1-216-833-11	METAL CHIP	10K	5%	1/10W
R260	1-216-834-11	METAL CHIP	12K	5%	1/10W
R261	1-216-833-11	METAL CHIP	10K	5%	1/10W
R262	1-216-815-11	METAL CHIP	330	5%	1/10W
R263	1-216-861-11	METAL CHIP	2.2M	5%	1/10W
R264	1-216-845-11	METAL CHIP	100K	5%	1/10W
R265	1-216-838-11	METAL CHIP	27K	5%	1/10W
R269	1-216-833-11	METAL CHIP	10K	5%	1/10W
R271	1-216-841-11	METAL CHIP	47K	5%	1/10W
R273	1-216-864-11	SHORT CHIP	0		
R274	1-216-841-11	METAL CHIP	47K	5%	1/10W
R280	1-216-864-11	SHORT CHIP	0		
R281	1-216-864-11	SHORT CHIP	0		
R282	1-216-864-11	SHORT CHIP	0		
R284	1-216-833-11	METAL CHIP	10K	5%	1/10W
R301	1-216-295-00	SHORT CHIP	0		
R302	1-216-295-00	SHORT CHIP	0		
R303	1-216-821-11	METAL CHIP	1K	5%	1/10W
R311	1-216-809-11	METAL CHIP	100	5%	1/10W
R312	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R313	1-216-817-11	METAL CHIP	470	5%	1/10W
R314	1-216-817-11	METAL CHIP	470	5%	1/10W
R315	1-216-817-11	METAL CHIP	470	5%	1/10W
R316	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R317	1-216-833-11	METAL CHIP	10K	5%	1/10W
R318	1-216-817-11	METAL CHIP	470	5%	1/10W
R319	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R320	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R321	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R322	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R323	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R324	1-216-833-11	METAL CHIP	10K	5%	1/10W
R325	1-218-867-11	METAL CHIP	6.8K	5%	1/10W
R326	1-216-833-11	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R327	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R328	1-216-838-11	METAL CHIP	27K	5%	1/10W
R329	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R330	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R331	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R332	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R333	1-216-847-11	METAL CHIP	150K	5%	1/10W
R334	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R335	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R336	1-216-833-11	METAL CHIP	10K	5%	1/10W
R349	1-216-833-11	METAL CHIP	10K	5%	1/10W
R351	1-216-295-00	SHORT CHIP	0		
R352	1-216-295-00	SHORT CHIP	0		
R358	1-216-833-11	METAL CHIP	10K	5%	1/10W
R359	1-216-833-11	METAL CHIP	10K	5%	1/10W
R360	1-216-809-11	METAL CHIP	100	5%	1/10W
R401	1-216-295-00	SHORT CHIP	0		(EXCEPT NC665P)
R402	1-216-295-00	SHORT CHIP	0		
R403	1-216-817-11	METAL CHIP	470	5%	1/10W (EXCEPT NC665P)
R405	1-216-809-11	METAL CHIP	100	5%	1/10W
R406	1-218-831-11	METAL CHIP	220	0.5%	1/10W (EXCEPT NC665P)
R407	1-218-831-11	METAL CHIP	220	0.5%	1/10W (EXCEPT NC665P)
R408	1-218-831-11	METAL CHIP	220	0.5%	1/10W (EXCEPT NC665P)
R409	1-218-831-11	METAL CHIP	220	0.5%	1/10W (EXCEPT NC665P)
R410	1-218-831-11	METAL CHIP	220	0.5%	1/10W (EXCEPT NC665P)
R411	1-218-831-11	METAL CHIP	220	0.5%	1/10W (EXCEPT NC665P)
R412	1-216-833-11	METAL CHIP	10K	5%	1/10W
R413	1-216-867-11	METAL CHIP	6.8K	5%	1/10W
R414	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R415	1-216-797-91	METAL CHIP	10	5%	1/10W (NC665P)
R423	1-216-833-11	METAL CHIP	10K	5%	1/10W
R426	1-216-833-11	METAL CHIP	10K	5%	1/10W
R430	1-216-797-11	METAL CHIP	10	5%	1/10W
R436	1-216-864-11	SHORT CHIP	0		(NC665P)
R438	1-216-864-11	SHORT CHIP	0		(NC665P)
R439	1-216-864-11	SHORT CHIP	0		
R507	1-216-809-11	METAL CHIP	100	5%	1/10W (NC665P)
R511	1-216-809-11	METAL CHIP	100	5%	1/10W (NC665P)
R512	1-216-864-11	SHORT CHIP	0		(NC665P)
R513	1-218-285-91	METAL CHIP	75	5%	1/10W (NC665P)
R514	1-218-292-91	METAL CHIP	20K	5%	1/10W (NC665P)
R536	1-216-809-91	METAL CHIP	100	5%	1/10W (NC665P)
R558	1-216-809-91	METAL CHIP	100	5%	1/10W (NC665P)
R559	1-216-809-91	METAL CHIP	100	5%	1/10W (NC665P)
R568	1-216-819-91	METAL CHIP	680	5%	1/10W (NC665P)

Ref. No.	Part No.	Description			Remark
R570	1-216-822-11	METAL CHIP	1.2K	5%	1/10W (NC665P)
R571	1-216-822-11	METAL CHIP	1.2K	5%	1/10W (NC665P)
R573	1-216-809-11	METAL CHIP	100	5%	1/10W (NC665P)
R574	1-218-834-11	METAL CHIP	300	0.5%	1/10W (NC665P)
R575	1-218-834-11	METAL CHIP	300	0.5%	1/10W (NC665P)
R576	1-218-834-11	METAL CHIP	300	0.5%	1/10W (NC665P)
R577	1-218-834-11	METAL CHIP	300	0.5%	1/10W (NC665P)
R578	1-218-834-11	METAL CHIP	300	0.5%	1/10W (NC665P)
R579	1-218-834-11	METAL CHIP	300	0.5%	1/10W (NC665P)
R585	1-216-833-91	METAL CHIP	10K	5%	1/10W (NC665P)
R601	1-216-809-11	METAL CHIP	100	5%	1/10W
R607	1-216-864-11	SHORT CHIP	0		(EXCEPT NC665P)
R608	1-216-864-11	SHORT CHIP	0		(EXCEPT NC665P)
R609	1-216-864-11	SHORT CHIP	0		(EXCEPT NC665P)
R612	1-216-864-11	SHORT CHIP	0		(EXCEPT NC665P)
R613	1-216-864-11	SHORT CHIP	0		(NC665P)
R614	1-216-864-11	SHORT CHIP	0		(NC665P)
		<COMPOSITION CIRCUIT BLOCK>			
RB102	1-233-270-11	NETWORK, RES (8 GANG) 10K			
		<VARIABLE RESISTOR>			
RV401	1-223-583-41	RES, ADJ, CARBON (3 TYPE) 1K			(EXCEPT NC665P)
RV501	1-223-583-41	RES, ADJ, CARBON (3 TYPE) 1K			(NC665P)
RV502	1-223-867-41	RES, ADJ, CARBON (3 TYPE) 1K			(NC665P)
		<VIBRATOR>			
X101	1-795-174-11	VIBRATOR, CERAMIC			
X102	1-795-630-11	VIBRATOR, CRYSTAL			(EXCEPT NC665P)
X102	1-781-867-21	VIBRATOR, CRYSTAL			(NC665P)

PL-032 BOARD COMPLETE (NC665P)
****

Ref. No.	Part No.	Description			Remark
		<CONNECTOR>			
CN701	1-568-941-11	“PIN, CONNECTOR 3P”			
		<DIODE>			
D701	6-500-598-01	DIODE SDLB3DC0A0100-DEF			
		<RESISTOR>			
R701	1-216-033-91	RES-CHIP	220	5%	1/10W

SW-385 BOARD COMPLETE
****

Ref. No.	Part No.	Description			Remark
		<CONNECTOR>			
CN501	1-695-820-11	CONNECTOR, BOARD TO BOARD 12P			
		<JUMPER RESISTOR>			
JR501	1-216-295-00	SHORT CHIP0			
JR504	1-216-295-00	SHORT CHIP0			
JR505	1-216-295-00	SHORT CHI	0		
JR507	1-216-295-00	SHORT CHIP0			
JR509	1-216-295-00	SHORT CHIP0			
		<RESISTOR>			
R502	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R503	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R504	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R505	1-216-081-00	RES-CHIP	22K	5%	1/10W
R506	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R507	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R508	1-216-071-91	RES-CHIP	8.2K	5%	1/10W (NC665P)
		<SWITCH>			
S501	1-762-196-21	SWITCH, TACT			
S502	1-762-196-21	SWITCH, TACT			
S503	1-762-196-21	SWITCH, TACT			
S504	1-762-196-21	SWITCH, TACT			
S505	1-762-196-21	SWITCH, TACT			
S506	1-762-196-21	SWITCH, TACT			
S507	1-762-196-21	SWITCH, TACT			
S508	1-762-196-21	SWITCH, TACT			
S509	1-762-196-21	SWITCH, TACT			(NC665P)

Ref. No.	Part No.	Description			Remark
*	A-6060-677-A	ER-14 BOARD COMPLETE (NC625:AEP,UK) ************************************			
		<CAPACITOR>			
C901	1-126-947-11	CERAMIC CHIP	47UF	20.00%	16V
C902	1-126-947-11	CERAMIC CHIP	47UF	20.00%	16V
C903	1-126-947-11	CERAMIC CHIP	47UF	20.00%	16V
C905	1-126-947-11	CERAMIC CHIP	47UF	20.00%	16V
C907	1-126-947-11	CERAMIC CHIP	47UF	20.00%	16V
C913	1-164-489-11	CERAMIC CHIP	0.22UF	10.00%	16V
C914	1-164-489-11	CERAMIC CHIP	0.22UF	10.00%	16V
C943	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C945	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C962	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C963	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V

ER-14 POWER BLOCK (ETXNY410M0F) POWER BLOCK (DPS-21BP)

Ref. No.	Part No.	Description			Remark
		<CONNECTOR>			
CN901	1-815-387-11	CONNECTOR, FPC/FFC 21P			
CNJ902	1-251-780-11	SOCKET, PIN 21P			
		<DIODE>			
D901	8-719-988-61	DIODE 1SS355TE-17			
D907	8-719-914-44	DIODE DAP202K-T-146			
D917	8-719-071-15	DIODE HZM6.8ZWA1TL			
D918	8-719-071-15	DIODE HZM6.8ZWA1TL			
D919	8-719-071-15	DIODE HZM6.8ZWA1TL			
D920	8-719-071-15	DIODE HZM6.8ZWA1TL			
D929	8-719-069-56	DIODE UDZSTE-176.2B			
D930	8-719-061-22	DIODE MA8130-M-TX			
		<FERRITE BEAD>			
FB907	1-469-130-11	SHORT CHIP	0		
FB908	1-469-130-11	SHORT CHIP	0		
FB909	1-469-130-11	SHORT CHIP	0		
FB910	1-469-130-11	SHORT CHIP	0		
		<IC>			
IC901	8-759-826-47	IC LA73052-TLM			
		<JUMPER RESISTOR>			
JR901	1-216-295-91	SHORT CHIP	0		
JR902	1-216-295-91	SHORT CHIP	0		
JR905	1-216-295-91	SHORT CHIP	0		
JR906	1-216-295-91	SHORT CHIP	0		
JR907	1-216-295-91	SHORT CHIP	0		
JR908	1-216-295-91	SHORT CHIP	0		
JR909	1-216-295-91	SHORT CHIP	0		
JR910	1-216-295-91	SHORT CHIP	0		
JR911	1-216-295-91	SHORT CHIP	0		
JR912	1-216-295-91	SHORT CHIP	0		
JR913	1-216-295-91	SHORT CHIP	0		
JR914	1-216-295-91	SHORT CHIP	0		
JR915	1-216-295-91	SHORT CHIP	0		
L905	1-412-064-11	INDUCTOR (SMALL TYPE)	100 UH		
		<TRANSISTOR>			
Q901	8-729-421-17	TRANSISTOR UN2213-TX			
Q902	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q903	8-729-424-08	TRANSISTOR UN2111-TX			
Q906	8-729-421-19	TRANSISTOR UN2213-TX			
Q907	8-729-424-08	TRANSISTORUN2111-TX			
Q908	8-729-421-20	TRANSISTORUN2211-TX			
		<RESISTOR>			
R902	1-216-295-91	SHORT CHIP	0		
R905	1-216-089-11	RES-CHIP	47K	5%	1/10W
R906	1-216-089-11	RES-CHIP	47K	5%	1/10W
R907	1-216-089-11	RES-CHIP	47K	5%	1/10W
R908	1-216-105-91	RES-CHIP	220K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R909	1-216-037-00	RES-CHIP	330	5%	1/10W
R910	1-216-037-00	RES-CHIP	330	5%	1/10W
R911	1-216-037-00	RES-CHIP	330	5%	1/10W
R912	1-216-037-00	RES-CHIP	330	5%	1/10W
R914	1-216-055-00	RES-CHIP	1.8K	5%	1/10W
R915	1-216-045-00	RES-CHIP	680	5%	1/10W
R916	1-216-055-00	RES-CHIP	1.8K	5%	1/10W
R917	1-216-055-00	RES-CHIP	1.8K	5%	1/10W
R918	1-216-021-00	RES-CHIP	68	5%	1/10W
R924	1-216-041-00	RES-CHIP	470	5%	1/10W
R926	1-216-041-00	RES-CHIP	470	5%	1/10W
R927	1-216-021-00	RES-CHIP	68	5%	1/10W
R928	1-216-021-00	RES-CHIP	68	5%	1/10W
R929	1-216-021-00	RES-CHIP	68	5%	1/10W
R939	1-216-017-91	RES-CHIP	47	5%	1/10W
R950	1-216-081-00	RES-CHIP	22K	5%	1/10W
R957	1-500-341-21	SHORT CHIP	0		
R958	1-500-341-21	SHORT CHIP	0		

⚠	1-468-743-11	POWER BLOCK (ETXNY410M0F) (NC625:PX,E,AEP,UK,SP,AUS) **************************		
		<FUSE>		
⚠F101	9-885-020-87	CARTRIDGE FUSE	250V/2A	
⚠F201	9-885-020-85	CARTRIDGE FUSE	250V/1.6A	
⚠F301	9-885-020-85	CARTRIDGE FUSE	250V/1.6A	

⚠	1-468-751-11	POWER BLOCK (DPS-21BP) (NC625:US,CND,MX/NC665P) ************************		
		<FUSE>		
⚠F1		FUSE	150V/2A	
⚠F101		FUSE	150V/2A	
⚠F301		FUSE	150V/2A	

		ACCESSORIES ************
	1-477-725-21	REMOTE COMMANDER (RMT-D155A) (NC665P)
	1-477-725-41	REMOTE COMMANDER (RMT-D155P) (NC625:AEP,UK,SP,AUS)
	1-477-725-11	REMOTE COMMANDER (RMT-D154A) (NC625:US,CND,PX,E,MX)

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
	3-081-944-12	MANUAL INSTRUCTION (ENGLISH) (NC625:US,CND,PX)	
	3-081-944-22	MANUAL INSTRUCTION (FRENCH) (NC625:CND)	
	3-081-944-32	MANUAL INSTRUCTION (ESPANISH) (NC625:MX,E)	
	3-081-945-12	MANUAL INSTRUCTION (FRENCH) (NC625:AEP)	
	3-081-945-22	MANUAL INSTRUCTION (GERMAN) (NC625:AEP)	
	3-081-945-32	MANUAL INSTRUCTION (ITALIAN) (NC625:AEP)	
	3-081-945-42	MANUAL INSTRUCTION (DUTCH) (NC625:AEP)	
	3-081-945-52	MANUAL INSTRUCTION (SPANISH) (NC625:AEP)	
	3-081-945-62	MANUAL INSTRUCTION (ENGLISH) (NC625:UK)	
	3-082-033-12	MANUAL INSTRUCTION (ENGLISH) (NC625:SP,AUS)	
	3-081-946-12	MANUAL INSTRUCTION (ENGLISH) (NC665P)	
	3-081-946-22	MANUAL INSTRUCTION (FRENCH) (NC665P:CND)	
	1-823-364-21	CORD, CONNECTION (NC665P)	
	1-569-008-22	ADAPTOR, CONVERSION 2P (NC625:PX,E)	
	3-082-033-12	MANUAL INSTRUCTION (NC625:SP)	

Ref. No.	Part No.	Description	Remark

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